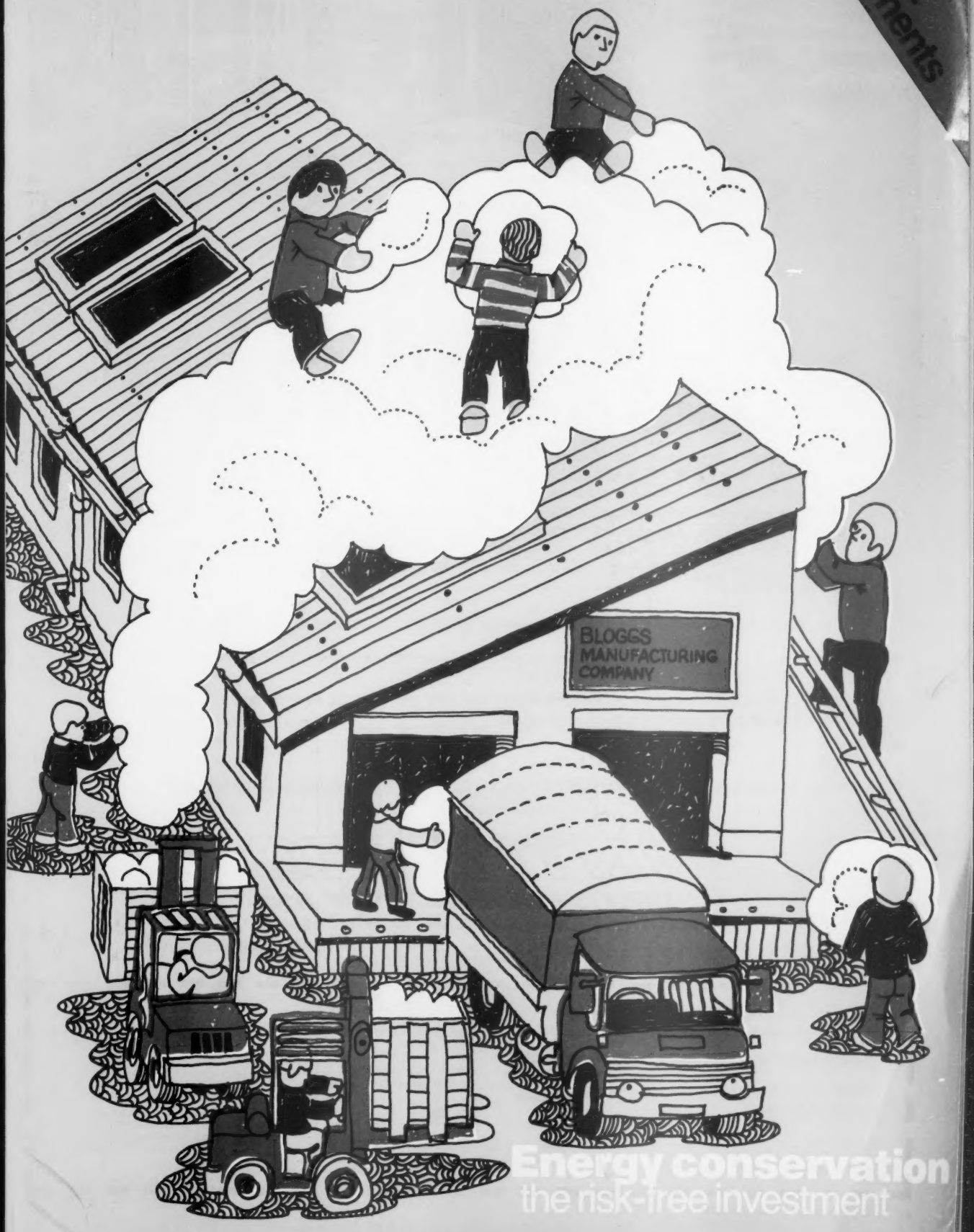
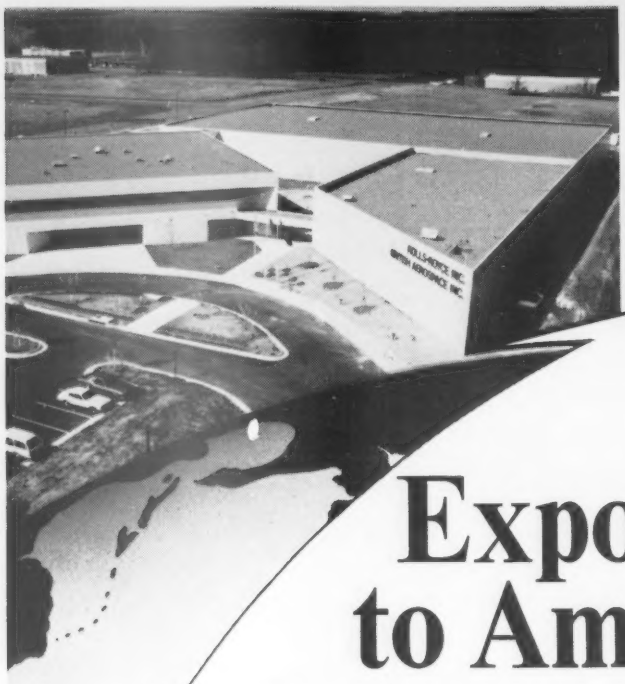
Trade and Industry

3 November 1978 Every Friday 40p

1970-77 import developments



Energy conservation
the risk-free investment



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Trade and Industry

3 November 1978

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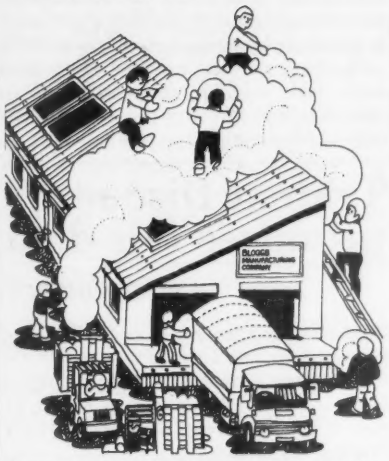

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Trade and Industry

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Trade and Industry this week

HOME

Bill on industrial democracy listed for new session

Legislation on industrial democracy is included in the government's proposals for the new parliamentary session.

The Queen's speech on Wednesday stated that 'Following further consultation on the proposals in the white paper on industrial democracy, legislation will be introduced to ensure that employees and unions are able to participate in discussions of corporate strategy and to provide in due course for employee representation on company boards'.

Other major items for proposed legislation affecting trade and industry are:

Company law. Legislation to amend company law will include strengthening the provisions governing the conduct of company directors.

Shipping. Bills will be introduced to improve safety and discipline at sea, to control marine pollution, and to amend other aspects of merchant shipping legislation.

Commercial arbitration. A bill will be introduced to improve procedures in commercial arbitration.

Small businesses. New ways will be sought to help small businesses.

National Enterprise Board. Legislation will be introduced to provide additional finance for the National Enterprise Board and for the Scottish and Welsh Development Agencies.

Details will be published in *Trade and Industry* next week.

NEB seek assurances on Solihull workforce

BL Ltd's programme to almost double Land-Rover and Range Rover production over the next three years, at a cost of some £280 million has been considered by the National Enterprise Board.

After a board meeting chairman Sir Leslie Murphy, said that the NEB fully accepted the importance of this project and would in principle wish to see BL proceed with it. However, before reaching a decision to seek the approval of the Secretary of State for Industry the NEB was asking BL for evidence that the work force at Solihull would fulfil their commitment to change their shift working practices to meet the needs of the programme. The NEB also needed to know how far the programme could be financed by BL from its own resources bearing in mind that the extent of any further commitment of funds to BL from NEB was uncertain.

Hattersley to act on bed pricing conclusions

Double pricing and use of recommended retail prices in the retailing of beds should be prohibited. These are the preliminary conclusions reached by Roy Hattersley, Secretary of State for Prices and Consumer Protection, on the recent Price Commission report into the pricing of beds.

Following discussions with manufacturers and retailers, Mr Hattersley said on Monday that there was a wide measure of agreement that the practice of offering substantial discounts from often arbitrarily set recommended retail prices was unhelpful to the consumer and could be misleading. In spite of his recently announced proposals for a draft order on misleading bargain offers, therefore, he considered it appropriate to act more immediately on pricing of beds.

Mr Hattersley said that since his proposals would involve retailers and manufacturers in significant changes to their present selling systems, he was inviting further comments before making a final decision.

Tv rental charges frozen until April

Charges for the rental of television sets for domestic use are to be held by certain companies until 1 April 1979. Prices secretary Roy Hattersley, announced on Tuesday that he had accepted this assurance from Thorn Television Rentals and Visionhire, following a Price Commission report.

TTR and Visionhire are among the leading six television rental companies which the commission was required by the terms of its direction to take into account in conducting its examination. The commission recommended that Visionhire and the three subsidiaries of TTR – Radio Rentals, Domestic Electric Rentals and Multi-Broadcast (Rentals) – should not increase their current charges for the hire of television sets for domestic use before 1 April 1979. 'Current charges' was interpreted as those applying as at 31 August 1978.

Representatives of TTR and of Visionhire have held separate discussions on the commission's report with officials of the prices department. While expressing reservations on some aspects of the report, the two companies have offered assurances that they do not intend to put up their charges before 1 April 1979.

Mr Hattersley has accepted these assurances and welcomes the companies' co-operation. The secretary of state's consideration of the report is now concluded.

Trident Discount promises fair deal

Gordon Borrie, Director General of Fair Trading, announced on Tuesday that Trident Discount Centres, nationwide retailer of domestic appliances and other consumer goods, had given him a written assurance under the Fair Trading Act 1973.

In asking for the assurance, the Director General took into account 115 complaints from customers in the Strathclyde and Lothian areas of Scotland between June 1974 and February 1978. The complaints were about a variety of goods including car radios, record players, television sets, watches, tumble dryers washing machines, freezers, toasters and kettles.

Consumers' complaints were of two main types – that the company's shops either refused redress or to replace defective goods, and that repairs undertaken by them on faulty goods were often unsatisfactory and necessitated repeated visits to the shop by the customer before a satisfactory result was achieved. In many cases, complaints were only resolved after the intervention of the local consumer protection department.

The company has stated that, to improve its service, in June it introduced a scheme throughout the United Kingdom enabling customers to obtain an immediate exchange of goods or a refund within seven days of purchase for whatever reason without quibble. Steps have also been taken to ensure that claims for compensation are dealt with promptly.

NEC proves its value – Meacher

An 'effective, attractive and accessible market place' for exhibitors and buyers alike was how Michael Meacher, Parliamentary Under-Secretary for Trade, described the National Exhibition Centre on Monday.

Commenting on the success of the 1978 motor show, which closed on Sunday, Mr Meacher said, 'The resounding success of the show, with over 900 000 visitors, had demonstrated the value of the National Exhibition Centre – widely regarded now as one of the

best national exhibition sites in Europe.

'With the motor show, the NEC, backed by the government and the City of Birmingham, has received its 5 millionth visitor and held its one hundredth show', he said.

New trunk road map published

The 1978 edition of the 'Trunk road map of Great Britain' was published on Monday by the Department of Transport.

The map shows, as at July 1978, all trunk roads and motorways in use, and all trunk road and motorway schemes costing over £500,000 that are under construction or in preparation. All schemes are identified by name.

TECHNOLOGY

Microprocessor awareness to be promoted

A three year national programme of seminars on the potential for applying microprocessors in industry is to be set up early in the new year.

Making this announcement on Monday, Secretary of State for Industry Eric Varley said that the programme would include the appointment of consultants by the Department of Industry to work with the National Computing Centre on setting up the programme.

Mr Varley pointed out that the government had decided to supplement its existing policies with a major and wide ranging programme of action, covering general awareness of the potential of microelectronics; training and education to increase the supply of the necessary skills; and various forms of direct assistance to encourage innovative applications of the technology. Fuller details of the government's programme will be published in *Trade and Industry* next week.

Grant aids battery development

Chloride Silent Power Ltd has received a £1.9 million grant from the Department of Industry to support the continued development of the sodium sulphur battery, it was announced on Tuesday.

This battery has been under development by Chloride Silent Power at its Runcorn research establishment since the formation of the company, jointly owned by the Electricity Council and the Chloride Group, in 1974.

The £1.9 million grant is made under the Science and Technology Act 1965, from funds made available through the government's product and process development scheme. To date, £2.6 million has been spent by the company on sodium sulphur battery development and the department's grant is a contribution towards further development expenditure over the next four years. It will include the building of a pilot manufacturing plant.

With at least three times the energy of the lead acid battery now used in battery operated vehicles, the new battery would give road vehicles a range of well over 100 miles, compared with the 60 miles range at present obtainable.

'Most of the basic research and development problems have now been overcome,' said Dr Brian Halliwell general manager of Chloride Silent Power. He added that the company was building a prototype battery, which when completed would be fitted to a road vehicle for trials.

This government support for the battery's development and demonstration phases follows the successful cordinated research programme carried out under the five-party sodium sulphur research agreement by Chloride Silent Power, AERE Harwell and British Rail. This programme was also government assisted. Work at British Rail and Harwell was funded by the other two parties to the agreement the Departments of the Environment and Industry.

EUROPE

Fish conservation measure postponed

Agriculture minister John Silkin has decided not to bring in the introduction of a 70 mm minimum mesh net for all nephrops fishing in British fishery limits on 1 November. This was one of a number of conservation measures announced by the UK government on 3 July, the rest of which have been implemented.

Speaking after a meeting with the German presidency in Luxembourg on Monday, Mr Silkin said he had taken this decision because he knew the introduction of this measure would cause difficulties for some community fishermen he was willing to defer introduction until after the fisheries council at the end of November in the hope that it would help to produce an atmosphere in which we could move to an acceptable settlement on a common fisheries policy. He now looked to the UK's partners to make a constructive response.

OVERSEAS

China's vice-premier to visit UK

Vice-premier of China, Wang Chen, will visit Britain from 6 to 17 November at the invitation of the Secretary of State for Industry, Eric Varley.

Vice-premier Wang has overall responsibility for a number of industry ministries including those concerned with the aircraft industry, shipbuilding and offshore oil.

He and his advisers will meet the Prime Minister and senior ministers, the leader of the opposition, members of both houses of parliament, the Governor of the Bank of England and industrialists.

Commercial visits arranged by the British Overseas Trade Board include British Aerospace, Rolls-Royce Ltd, British Shipbuilders, International Computers Ltd and Marconi Ltd. A meeting with the Offshore Supplies Office in Edinburgh will be followed by a flight over North Sea oilfields.

Industry briefed on US technology

British industrialists were given an opportunity to learn more about important technological developments in the United States during a series of seminars given by John Thompson counsellor (science and technology) British embassy, Washington who was in the UK from 23 October to 3 November.

Mr Thompson has been talking to industrialists in Nottingham, Leeds, Birmingham, Manchester, Newcastle upon Tyne, and London. He explained that his aim was to provide feed-back on United States technological development and how this might affect British business prospects in the United States. He was also reminding British businessmen of the advice available at the British embassy in Washington.

Company law fact-finding talks in US

Stanley Clinton Davis, Parliamentary Under-Secretary of State for Companies, Aviation and Shipping, arrived back on Tuesday after a fact-finding visit to the United States on company law issues.

Mr Clinton Davis had talks in New York with stock exchange officials and representatives of the accountancy profession on matters that included insider dealing, the composition of company boards, audit committees and the self-regulation of the accountancy profession.

Postpone media decision – Hart

Overseas development minister Judith Hart has urged the Unesco general conference to postpone a decision on the mass media.

Addressing the conference in Paris on Monday, she said the British government could not support some aspects of the draft.

The document raises the question whether editorial responsibility is merely to satisfy people's right to be informed or whether it should assume a broader educational, social and political role. It lays on governments responsibility for what appears in the press.

The draft is due to be discussed in Unesco's planning session on 16 November.

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Department of Industry

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1. **Business Analyst** part ACMA a tough hardworking technical cost accountant with large manufacturing group experience. Seeks career development opportunity in anticipation of completing his exams shortly. **Age 27 Salary £8,000**
2. **Merchant Banker** BA(Cantab) ACA AIB. A wide range of City and international experience covers Eurocurrency, leasing, loan negotiations, new issues especially in Kenya and Australia. Promotion blockage. Seeking career development, location flexible. **Age 34 Salary circa £10,000**
3. **Financial Controller** B Com. CA. A thorough professional with considerable experience of financial management in Canada and Africa. He now wishes to be based in UK for family reasons. Location flexible. **Age 34 Salary circa £10,000**
4. **Money Broker.** BA(Hons) MBA. With sound City experience in leasing, oil economics and handling local authority property developments. Seeks career opportunity to widen his overall experience, and increased responsibility. **Age 32 Salary £12,000**
5. **Investment Analyst/Corporate Planner.** BA(Hons) Law, fluent French. A highly successful record as analyst, pension fund manager and property consultant. Wishes to relocate to UK for family reasons. **Age 31 Salary circa £15,000**
6. **Finance Director** BSc(Chem) ACA. With considerable experience as director of admin. in the wholesale and retail industry, with responsibility for the co-ordination of production mail order and retail of 100 substantial outlets. **Age 32 Salary £12,000+**
7. **Financial Vice President.** AIB, fluent Arabic and Malay, some German. His international experience covers banking, insurance and financial management with the construction industry. Location very flexible but would prefer Middle or Far East. **Age 41 Salary £15,000+**
8. **Corporate Finance Manager.** FCA. An impressive Group Technical Accountant (TO £500M+) with substantial international experience in major fmcg group. Promotion blockage, wishes to manage his own financial operation. Location flexible. **Age 39 Salary £15,000**
9. **Senior Financial Executive.** BSc Chem. ACA, ACMA, ACIS. An outstanding financial and commercial executive with substantial major international group experience covering all financial and many commercial disciplines handling contracts exceeding £100,000. Seeking career development. **Age 36 Salary £15,000+**
10. **Group Financial Controller.** FCA. An impressive technical financial executive whose substantial international experience covers financial and control systems planning for automotive, glass and building products. Promotion blockage. **Age 36 Salary £12,000**
11. **Finance Director and Company Secretary.** FCA with substantial management experience in retail and discount trading internationally. Especially in car products, textiles and furniture. Promotion blockage – seeking career progression. **Age 35 Salary circa £15,000**
12. **Finance Director.** BA, fluent French and German. An impressive 'high flyer' with large international group experience covering a wide range of manufactured products and services. Seeking a UK base for family reasons. **Age 33 Salary circa £17,000**

MARKETING

13. **Buyer/Saleswoman.** BSc. bilingual English/French, good German. Has 2 years experience of buying products for a major manufacturer in the electronics industry. Promotion and salary blockage, seeking career development. **Age 23 Salary circa £5,000**
14. **Salesman.** BA (Hons) Econ. MBA (Marketing), good Arabic. Well educated and articulate with a knowledge of the hospital industry. Wishes to develop his career in Capital Engineering and consumer durable goods marketing expecially in the Middle East. **Age 25 Salary circa £5,000**
15. **International Marketing Director.** BS(Vermont). An ambitious self starter with a excellent knowledge of the footwear industry in UK and USA. Seeks a greater opportunity for his energy, ability and entrepreneural skills. **Age 28 Salary £10,000+**
16. **International Salesman.** Fluent Chinese (Cantonese), good French. With exceptional knowledge of the Republic of China and a good understanding of the Far East in general. A good practical salesman in the service industries now seeks opportunity to guide a company interested in trading with China. **Age 39 Salary £7,000+**
17. **General/Sales Manager.** A most impressive and persuasive manager with ability to sell most manufactured products or services who has trained and activated a highly successful sales force. Seeking greater responsibility. **Age 31 Salary £10,000**
18. **Export Area Manager.** A tough, practical and successful sales manager with an excellent knowledge of the medical pharmaceutical and hospital supply industries worldwide – especially the Middle East. Seeks a company with sound production back up. **Age 34 Salary £8,000**
19. **Marketing/PR/Services Manager.** CAM. Fluent French, Spanish, Italian and Portuguese with some German and Arabic. Intellignet and attractive with diplomatic and commercial experience in both State and Nationalised industries of the UK and South America. Wishes to renew her industrial activity. **Age 36 Salary £8,000**
20. **Area Manager.** BA M Inst Exp. Fluent French, good German, Spanish, Russian. A very sound and reliable overseas manager with experience in electrical and consumer durable products. Following 18 years in present company now seeks greater scope. **Age 43 Salary £8,500**
21. **Operations/Sales and distribution Director** with major international group experience (TO £800M) handling food, toiletries and financial services. Has controlled a field force of 600+ and 30 000+ outlets. Seeking career move leading towards general management. **Age 36 Salary £15,000+**
22. **Marketing Director.** M.Inst Mkt. M.Inst Exp. Impressive sales experience in heavy engineering and construction aspects of industry worldwide. Very sound sales force management experience. Promotion blockage. **Age 41 Salary £10,000+**
23. **General/Export Marketing Director.** MA (Oxon) MBA (INSEAD). Fluent in 9 languages including German, French, Arabic, Tai, Japanese. A quite exceptional large group director who following 2 successful years trial in consultancy wishes to return to a line appointment. Location flexible. **Age 38 Salary circa £17,000**
24. **Non Executive Marketing Director.** Fluent French, German, Dutch, Spanish, Portuguese. An outstanding career with major electrical/electronics group in establishing new markets in 30 countries. A good knowledge of retail and rental operations. Seeking a wider area of responsibility. **Age 58 Salary negotiable**

GENERAL MANAGEMENT

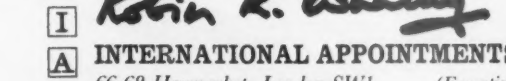
25. **Graduate.** BA(Hons). Fluent in German, French, Italian, Polish. Quick witted and intelligent with some experience of publishing, leisure industry and air freight management. Good PA material. **Age 24 Salary circa £5,000**
26. **Aircraft Pilot.** Full Air Transport Pilots licence with instrument rating. Recently retired from RAF and wishes to make a career in industry inside or outside the air industry. Good knowledge of Middle East. Highly suitable for private airline or air taxi firm. Location very flexible. **Age 40 Salary £6,000+**
27. **Structural Engineer.** BSc Const Eng (Hons). A tough practical and likeable engineer with design and consultancy experience. Has worked in the Middle East, London and Nigeria. **Age 30 Salary circa £12,000**
28. **Chief Executive.** M Inst Mkt M Inst Mat. Handling. A professional M/D with food manufacturing (own label) and marketing experience related to large stores. His sound marketing experience includes working in the developing countries. Location very flexible. **Age 36 Salary £20,000**
29. **Merchandise Controller.** Extensive experience in the purchase of non-food products for large retail, wholesale and mail order operations (TO £90m). Also has overseas experience. Seeking fresh opportunity because of promotion blockage. **Age 46 Salary £13,000**
30. **Chief Executive.** MA (Cantab) Law. MIEx. M Inst Mkt. Fluent Spanish, good French. A professional expatriate M/D with experience of manufacturing building materials and domestic appliances in S. America the Far East and UK. A sound marketing background. Location entirely flexible. **Age 38 Salary £12,000 (UK base rate)**
31. **General/Marketing Manager.** HND Elect Eng. Large international group experience especially in semiconductors and electronic components including microprocessors, with a good understanding of distribution problems. Seeking a career move. **Age 37 Salary £14,000**
32. **General Manager.** BSc AIFST. BSF. Good French. A food technologist with a wide range experience in dairy foods and fine chemicals, including flavours and fragrances. An able technician with a strong marketing background. Location entirely flexible. **Age 38 Salary £11,000 (UK equivalent)**
33. **Head of Personnel.** BSc MIPM. An impressive personnel executive with substantial large international corporate experience including development and training for 30 000 employees. Has both IR and works management experience. Promotion blockage. Location very flexible. **Age 39 Salary £12,000+**
34. **Chief Executive.** BA (Oxon) Law. An excellent record in the larger aspects of wholesale and retail store management. While mainly food related he also has much experience of property development. **Age 45 Salary £20,000**
35. **Chief Executive.** MICE MBIM AIArb. A first class record in both the heavy electrical manufacturing industry and in Civil and constructive engineering. An experienced company doctor who would like to move to a medium sized company. (TO £20m). **Age 47 Salary £15,000**
36. **Non Executive Director.** BSc 1st Class Hons MSc. C Eng. MIEE FBIM. Following an oustanding career in engineering, electronics and telecommunications world wide, this unusual man has much to offer as a consultant or as a Chairman of an Association. Highly personable. **Age 56 Salary negotiable**

NOTES

(i) All the above executives have been interviewed by us and we consider them to be high quality material in their particular range – there are several others whom space precludes.

(ii) If you require an executive of similar capability please contact me.

(iii) If you yourself feel that you match these standards and might benefit from a new opportunity please contact me in the strictest confidence and without any obligation.



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Home news

BAe bid to join Airbus is cleared for take off

Government endorsement of the arrangements regarding British Aerospace's membership of Airbus Industrie (AI) means that the way is now clear for BAe to become a full member of AI from 1 January, with a 20 per cent share in the organisation and equal voting rights (with a minor transitional exception) to those of the French and German AI partners.

Secretary of State for Industry Eric Varley informed M le Theule, French Minister of Transport, and Herr Gruner, Parliamentary State Secretary for Economic Affairs in the Federal German government, on 27 October of the British government's decision to accept the arrangements, which will include an agreement on the principles of co-operation between the three governments on the Airbus programme. A detailed intergovernmental agreement, analogous to the 1969 agreement between the French and German governments, will be concluded in due course on the basis of these principles.

On signing of the agreement, initialled by BAe, Aerospatiale and Deutsche Airbus on 18 August, BAe agrees to invest $50 million as its share of the net assets of AI, including work in progress at the end of the year. This amount is subject to verification and adjustment if necessary.

Entry into AI will mean that BAe will be a full partner of one of the two or three groupings which will dominate the civil aircraft market in the 1980s and 1990s. AI will be in a strong position to compete or collaborate with other manufacturers, inside or outside Europe. Full partnership will entail appropriate responsibility for decisions by the supervisory board and within the management of AI, including decisions on the B2/B4, A310 and any future projects launched by AI.

BAe will continue to fulfil its present obligations to manufacture the A300 B2/B4 wings and immediately undertake its share of the development of the A310. The new investment now planned, including the initial $50 million, will build up to a peak of £250 million by 1983.

On the question of an order from British Airways for Airbus products, British Airways had told the government that if, over and above the aircraft it has just acquired, needs were to be identified in the area of wide-bodied, medium-range aircraft of 200 seats, comparisons BA has made show the A310 to be the aircraft that would best meet such needs.

The intergovernmental agreement on principles of co-operation includes provisions which should provide opportunities for the British aviation equipment industry and Rolls-Royce to participate suitably in the Airbus programme in due course.

Nuclear decisions must be based on public agreement – Cunningham

Decisions on the development of nuclear power cannot and will not be left to the industry alone but must be based on public understanding and agreement, John Cunningham, Parliamentary Under-Secretary of State for Energy, said on 24 October.

He told the British insurance (atomic energy) committee in London that doubt is sometimes expressed about the desirability of open discussion of the question of nuclear power. 'We in the United Kingdom do not share any such doubt,' he said. 'One of the great challenges posed by nuclear power is to secure public acceptance. The government believes that such public acceptance can only be soundly based on public understanding of its fundamental issues. And we believe that open discussion is an essential step in achieving that understanding'.

Dr Cunningham recalled that the two major vehicles of public debate in the UK – the royal commission on environmental pollution and the public inquiry on developments at Windscale – had encouraged widespread examination of the financial, social, safety, environmental and non-proliferation issues involved. Those broad-ranging inquiries on nuclear power in the UK certainly had done nothing but good, he said. Safety was a central issue and the care which the industry took and its high reputation in that field were confirmed.

'We believe that progress on the nuclear front can only be based on consent', he told the committee. 'Decisions on the development of nuclear power cannot and will not be left to the industry alone but be made on the basis of public understanding and democratically expressed agreement.'

OFT to investigate new-car faults

Director General of Fair Trading Gordon Borrie intends to conduct a close study of fault and warranty problems with new cars early next year.

The decision follows a pilot survey of new car owners published by the Office of Fair Trading in May showing that 67 per cent of new cars required some warranty repair work during the first five months of life.

At the annual dinner of the Motor Agents' Association on 24 October, Mr Borrie expressed serious concern about the apparent disparity in quality control between different manufacturers – with some manufacturers managing to hold their significant fault level to 4.9 per cent, whereas with others, the figure rose to as high as 46 per cent. Inferior quality on this scale, he said, made it very difficult for the dealer to give good service to the consumer when the goods he offers for sale arrive 'riddled with fault and failure'.

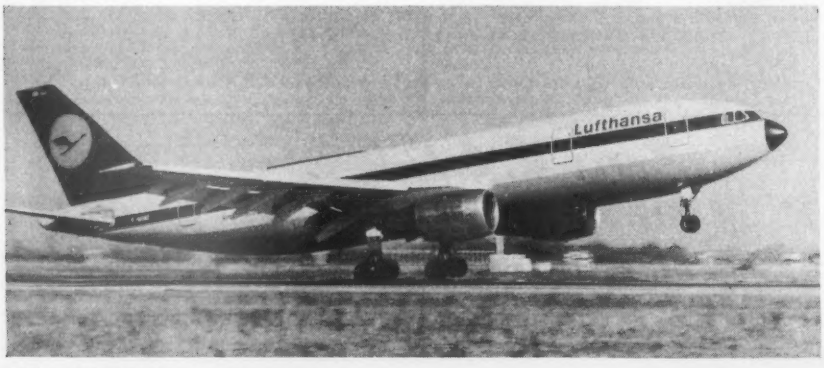
The Office of Fair Trading had not published in full its detailed findings from the survey, but these had been passed to each individual manufacturer through the Society of Motor Manufacturers and Traders. Mr Borrie said he hoped the manufacturers were now looking at their quality checks and control procedures as a matter of urgency.

He warned, 'I give notice that I intend to conduct a more detailed study of fault and warranty problems early in 1979. On receipt of these findings, I will not hesitate to publish any figures which indicate a worsening trend or which record a manufacturer's fault figure deviating significantly from the industry norm.'

Mr Borrie also told MAA members that widespread odometer frauds which could involve millions of pounds on a national scale had been brought to his notice.

Since 1975, cases of false odometer prosecutions have trebled. Now there was

To date, firm orders for the A300 Airbus total 113 with options for a further 49 from 18 operators; 55 have been delivered.



wholesale 'clocking' – turning back the mileage reading – on ex-company and fleet hire cars, Mr Borrie said. Manufacturers and dealers would know that last year more than half of all new cars were sold for company or fleet hire use and those vehicles were resold to the trade after one or two years – often with high mileage readings on the odometer.

A number of trading standards officers – in co-operation with the original company purchasers of new cars – had been checking the mileage when vehicles were sold back into the used-car trade. Checks made with eventual purchasers two or three months later had shown that out of 1 614 routine checks, a staggering 874 vehicles – over 50 per cent – were found to have been 'clocked'.

Mr Borrie said he understood that such action could result in increases in the price of a used car ranging from £100 to £1,000 per vehicle. He expected, however, that because enforcement officers had concentrated on known problem areas, the national average would be shown to be smaller than the 50 per cent shown in the current sample. Nevertheless this was a fraud of substantial proportions.

Weeding out 'rogues'

Mr Borrie told members about progress on the Office of Fair Trading's special exercise to weed out the 'rogue' car dealers, most of whom were not members of the association and did not subscribe to the motor industry's code of practice. He said, 'In an attempt to complement the good work you are doing with the code, so far I have gathered information about 150 particular car dealers and if the facts warrant it, I shall not hesitate to use one of my various powers.'

BSI annual report sets out priorities

Priority is being given in the national standards work programme to providing industry and commerce with the technical tools they need to meet the Industrial Strategy targets of regenerated productivity and sustained export growth, says the British Standards Institute's (BSI) annual report, published on 18 October.

In his review of the year, BSI director general G. B. R. Feilden says that the value of the certification and information services operated by the institute to enable exporters to use standards effectively in penetrating overseas markets had not been overlooked. BSI's contribution to the objectives of the Industrial Strategy was thus interlinked, one service with another. This was one of the great strengths of the standards operation in the UK and the basis of the Institute's planning for the future, he said.

Special meetings with trade associations this year had underlined the importance of good briefing of committee members to ensure speed and quality in standards work and, second, the strict timetabling of the workload, for which five-year programmes were now being drawn up. The efficiency of the standards operation had been increased by greater emphasis on the commercial demand for particular projects and closer attention to their scope and to relevant foreign or international standards. Use of computers and word-processing equipment, and close target dating, had also reduced the production time for British standards, the report says.

International projects occupied the greater part of the BSI programme, the aim being 'to identify the areas of greatest potential benefit to UK industry and to determine what kind of standards best suit UK exporters'. Much useful work had already been done to assist trade within the European community. More than 50 European standards had now been published, a third of them in the past year.

Philips gives assurances on resale prices

Philips Industries has assured the Office of Fair Trading that it would not use any form of sanction to discourage a dealer from selling its major domestic appliances at less than the suggested going price.

The assurance follows press reports in July about Philips' resale prices policy on these goods. Some of the reports raised doubts as to whether Philips was acting fully in accordance with the provisions of the Resale Prices Act 1976, and the Office of Fair Trading asked the company for an explanation of its pricing policies.

During the correspondence and discussions which followed it emerged that none of the statements to the press had been made with the full authority of the company. Further, Philips agreed that some of them could be misconstrued.

Philips has now informed the Office of Fair Trading that its price lists to dealers for these goods include three sets of prices – list prices,

WEMBLEY AUCTION SALES
1978

7 November

View Days:	Day preceding and morning of sale
Location:	Department of the Environment Property Services Agency Supplies Stores India Pavilion Exhibition Grounds Wembley, Middx. Tel. 01-903 2508
Description of Goods:	Miscellaneous office equipment and furniture etc. (Potential buyers are advised to refer to the official catalogue available from the auctioneers, price 20p.)
Auctioneers:	Messrs Hollingsworth Westcombe House 56/58 Whitcomb Street Leicester Square London WC2H 7DR Tel. 01-839 1875

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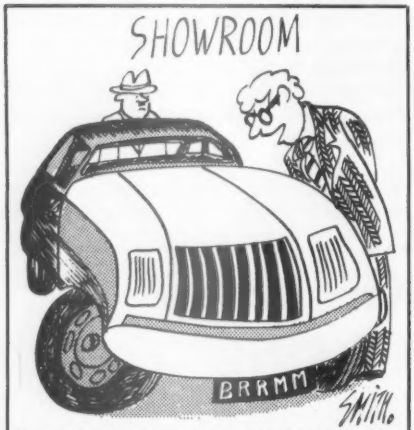
recommended retail prices and suggested going prices. List prices are the prices to which VAT is added to reach the recommended retail prices. Philips admit that the recommended retail prices are largely 'cosmetic' as most dealers offer substantial discounts off them. They point out, however, that they abandoned such prices some time ago in sympathy with criticism expressed in some official reports, but have had to re-introduce them to allow the customer to make a fair comparison between Philips' goods and those of their competitors. The suggested going prices represent, in the company's view, the prices at which a reasonably efficient high street shop could be expected to offer the goods.

New mpg list for cars

Nearly 200 changes have been made to the list of official fuel consumption figures for new cars. The second edition of the list, published by the energy department on 24 October, includes over 750 cars.

Added to the list are 142 models. There have been almost 40 retests and figures for about 20 cars, no longer in production, have been deleted. Re-tests are necessary where, for example, significant technical changes have been made to a model.



'Surprised the energy department hasn't brought out a gpm list'

Since 1 April, new-car dealers have been obliged to have details of the official test results available for customers to see. Since April, it has also been illegal to display new cars in showrooms or on forecourts without a label showing the official fuel consumption figures for that model. Official figures must also be included in car handbooks and, if reference is made to fuel consumption, in promotional literature and advertising.

Anyone failing to observe the regulations, made under the Control of Fuel and Electricity, Passenger Car Fuel Consumption Order 1977 (SI 1977, 1603, HMSO, 25p) could be liable, on conviction, to a fine of up to £400. Copies of the revised list, which will be updated about every six months, are available from: Car Fuel List, Information Division, Department of Energy, Room 1387, Thames House South, Millbank, London SW1P 4QJ.

The risk-free investment
'Trade and Industry's' special report on energy conservation is published in this issue

New Seaspeed hoverport opened

Seaspeed's new hoverport at Dover's Western Docks has been officially opened by the Duke of Kent.

The Dover international hoverport, built at a cost of £14 million, is the largest and most modern of its kind in the world. It will serve the expanding operations of BR Hovercraft and its French partners – SNCF – in the Seaspeed enterprise which, by next summer, will be operating three of the world's largest hovercraft on routes linking Dover with Boulogne and Calais. Between them, the three hovercraft – two British and one French – will offer a fourfold increase in capacity to 3 million passengers and 400 000 cars a year.

This big increase in operations led to the decision to build the new hoverport – to accommodate the jumbo-size hovercraft and to provide a bigger and more comfortable terminal for passengers. The construction, on 15 acres of reclaimed land, was undertaken jointly by the Dover Harbour Board and British Rail Hovercraft.

DoI advance factories

Askam in Furness
Work is starting on an advance factory of 225 m² for the development commission at Askam-In-Furness, Cumbria. Premises should be ready for occupation in March 1979. Inquiries on purchase or lease: Mr C. Giles, Department of Industry, North West Region, Sunley Building, Piccadilly Plaza, Manchester M1 4BA, tel. 061-236 2171 ext. 646.

Haydon Bridge
Work is starting on an advance factory of 450 m² for the development commission at Haydon Bridge, Northumberland. Premises should be ready for occupation in April 1979. Inquiries on purchase or lease: Regional Director, Department of Industry, Northern Region, Stanegate House, Groat Market, Newcastle upon Tyne NE1 1YN, tel. 0632 24722.

Haltwhistle
Construction of an advance factory of 450m² for the development commission has begun at Haltwhistle industrial estate, Northumberland. The premises should be ready for occupation in April 1979. Inquiries about purchase or lease: Regional Director, Department of Industry, Northern Region, Stanegate House, Groat Market, Newcastle upon Tyne, tel. 0632 24722.

Lillyhall
Two advance factories for the Department of Industry are to be constructed on the Lillyhall industrial estate, Workington, Cumbria. One is a unit of 900m² and the other is of 1300m² The premises should be ready for occupation in May 1979. Inquiries about purchase or lease: Regional Director, Department of Industry, Northern Region, Stanegate House, Groat Market, Newcastle upon Tyne NE1 1YN, tel. 0632 24722.

St. Helens
Two advance factories of 900m² are to be built at Sherdley Road, St. Helens, Merseyside. They should be ready for occupation in June 1979. Inquiries about purchase or lease: Mr C. Giles, Department of Industry, North West Region, Sunley Building, Piccadilly Plaza, Manchester M1 4BA, tel. 061-236 2171.

Blackburn
Work is starting on an advance factory of 1260m² for the Department of Industry at the Bank Top site, Blackburn. The factory is of the terrace unit type and is divisible into two individual units of 630m² each. The premises should be ready for occupation in May 1979. Inquiries about purchase or lease: Mr C. Giles, Department of Industry, North West Region, Sunley Building, Piccadilly Plaza, Manchester M1 4BA, tel. 061-236 2171.

Askrigg
Work has started on an advance factory of 225m² for the development commission at Askrigg, Leyburn, North Yorkshire. The premises should be ready for occupation in March 1979. Inquiries about purchase or lease: Regional Director, Department of Industry, Yorks and Humberside Region, Priestley House, Park Row, Leeds, tel. 0532 443171.

Extending
An extension of approximately 1800m² is to be built onto the Schwitzer Division of Wallace Murray's advance factory at Euroway Industrial Estate, Bradford.

Schwitzer manufactures turbocharger and automative components and the extension will treble the size of its existing factory of 900m². There will be an eventual employment requirement for 70 additional personnel.

Moving in
Lustre Welch into an advance factory terrace unit of about 225 m² built by the English Industrial Estates Corporation for the development commission at Malton, North Yorks. Lustre Welch, manufacturers of high-class pottery items, a large percentage of which are exported. The move to new premises will enable the company to expand production of their existing products and to increase the range of items produced. A further 14 people will eventually be employed as a result of this expansion.

Mackerel fishing arrangements

Vessels of over 60 ft registered length are to be prohibited under the licensing arrangements announced on 24 October from fishing for mackerel within three miles of the coasts of Devon, Cornwall and the Isles of Scilly.

The arrangements, which come into effect on 5 November, were announced by fisheries minister John Silkin in answer to a parliamentary question.

Under a variation order laid before parliament last week, handliners and all fishing vessels of less than 40 ft registered length will be exempt from the licensing requirement. Under a further order the licensing requirements is being extended to vessels registered in the Channel Islands and the Isle of Man, again with an exception for handliners and of vessels less than 40 ft registered length.

The arrangements will restrict the quantities of mackerel licensed UK vessels may land or tranship on a weekly rather than a daily basis. The weekly quotas will be equivalent to up to 15 tonnes per man per week, in the case of vessels with relatively large crews, rising to 20 tonnes per man per week in the case of the smallest licensed trawlers.

The new arrangements take account of the recommendations in the report by the expenditure committee on the fishing industry that discarding at sea should be banned and that the fisheries inspectorate should be given any further powers needed to enable the quantities of fish being transhipped to be properly checked, Mr Silkin said. The new licensing arrangements did not include a ban on discarding at sea, mainly because of the serious difficulties in enforcing such a ban.

Transhipments would continue to be subject to special controls and monitoring. The arrangements which operated during the 1977-78 season seemed to have worked satisfactorily, he said, but steps were being taken to increase the number of checks during the coming season.

The new licensing arrangements would be kept under review, and there would be surveillance of foreign as well as UK fishing effort in this fishery. Licences under the current mackerel licensing scheme would cease to be valid from midnight on 4 November.

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British Airways appeal dismissed

British Airways has lost its appeal to operate charter flights from Heathrow to Strasbourg. Secretary of State for Trade Edmund Dell dismissed the appeal against the refusal of a licence by the Civil Aviation Authority. The decision is in line with the policy that no new whole-plane charters should operate from Heathrow.

Official appointments

Roy Hattersley, Secretary of State for Prices and Consumer Protection, has made the following appointments:

Post Office Users' Council for Northern Ireland. Mr J. J. Donnelly, Mr J. V. Browne, Miss K. J. H. O'Brien, Mrs P. O'Connor, Prof R. D. C. Black and Mr P. O'Hagan as members of the council until 31 May 1981.

Central Transport Consultative Committee. Mrs N. Bloom as a member of the committee until 31 July 1980.

Electricity Consultative Council. Councillor Henry McAtominey, Councillor Mrs Audrey Phillips, Dr Ian Reekie and Mrs Angela Shaw as members of the North Eastern Electricity Consultative Council until 31 May 1981. Mrs Vera Jennings, Miss Ann Lusher, Gordon Neville and Mrs Diana Short as members of the South Eastern Electricity Consultative Council until 30 June 1981. Miss Gillian Arnott, Miss Jacqueline Clark, Mrs Mair Jones and Councillor Joseph Mulcrow as members of the Merseyside and North Wales Electricity Consultative Council until 31 March 1981.

Court order against trader

Gordon Borrie, Director General of Fair Trading, has obtained a court order against a Warwickshire trader who was selling glass fibre panels for cars by direct sale and mail order. Birmingham County Court ordered Anthony R. Guy, formerly trading as Guy Performance (Alcester) of Birmingham and Alcester, to stop selling consumers faulty or misdescribed glass fibre parts for cars and to stop keeping money from consumers to which they were legally entitled. The director general asked for the order because although Mr Guy had given him a written assurance last January not to continue such conduct, it appeared that he had broken this promise.

Merger proposals cleared

Roy Hattersley, Secretary of State for Prices and Consumer Protection, has decided, on the information at present before him, not to refer the proposed merger between Guest, Keen and Nettlefolds Ltd and the Stern Osmat Group Ltd to the Monopolies and Mergers Commission under the provisions of the Fair Trading Act 1973.

Parliament

Tuesday, 24 October

Trade mark office

Geoffrey Dodsworth (South West Hertfordshire) asked the Secretary of State for Trade, if he would make a statement on his recent efforts and progress relating to the siting of the European community trade mark office in London.

Mr Clinton Davis said that the proposed community trade mark law was still in the early stages of negotiation and the commission was therefore not expected to give consideration as to the location of the trade mark office for some time. Nevertheless, the government had made clear to its community partners its wish to locate the office in London. No offer of a particular site had been made. As indicated in his answer to the member for Bradford West on 21 July (see *Trade and Industry*, 28 July) the government had a prestige site in Bloomsbury Square in mind. The department was following the usual procedures for obtaining planning permission and had become aware that there were likely to be public objections to the proposal. Until this had been cleared up, the house would understand that further progress would be delayed.

South Africa and code of conduct

Frank Hooley (Sheffield, Heeley) asked which major British companies with interests in South Africa had not submitted by 30 September reports on their operations in that country in accordance with the code of conduct of the EEC, as published in the white paper, command paper 7233.

Mr Meacher replied that he assumed the questioner had in mind British companies owning more than 50 per cent of the equity of a South African affiliate and employing more than 20 Africans, since these were companies which, under the procedure set out in paragraphs 6 and 7 of command 7233, were requested to report in detail. Until the department received the reports it could not identify such companies with certainty since its knowledge of recent disposals – hence current interests, was necessarily incomplete. To date, however, over 100 firms had responded. Of those, 82 were companies with 50 per cent or more equity stake in South African companies employing 20 or more black Africans, 21 were companies with a lesser interest in South Africa. A general reminder was published in *Trade and Industry* on 22 September and letters were sent earlier this month to all those companies which were expected to report but had not then done so. Reports were still coming in and he was hopeful that the response would enable a detailed analysis to be made before the end of the year. Any company which received his secretary of state's letter of 25 May to chairmen and had not yet made clear its intentions for reporting would be well advised to do so quickly.

Trade with west Germany

Frank Hooley (Sheffield, Heeley) asked what was the value of exports from the United Kingdom to west Germany and of imports from west Germany to the United Kingdom in each of the years 1974, 1975, 1976 and 1977, and the first six months of 1978.

Mr Meacher gave the following information:

SITC Rev 2, £ million

	Exports (fob)	Imports (cif)
1974	1 055	1 932
1975	1 328	2 032
1976	1 860	2 780
1977	2 526	3 608
1978 Jan-Jun	1 459	2 175

Trade with South Africa

Neil Marten (Banbury) asked the Secretary of State for

Trade, if he would state the value of trade, both imports and exports, with South Africa for each of the last five years.

Mr Meacher gave the following information:

SITC Rev 2, £ million

	Imports (cif)	Exports (fob)
1973	401	374
1974	558	531
1975	633	690
1976	616	654
1977	877	586

Terms of trade index

Nigel Lawson (Blaby) asked the Secretary of State for Trade, what had been the percentage change in the terms of trade index from the first quarter of 1974 to the latest quarter for which figures were available.

Mr Meacher replied that the terms of trade index rose by 11 per cent between the first quarter of 1974 and the third quarter of 1978.

Vehicle components

Frank Hooley (Sheffield, Heeley) asked what was the value of vehicle components imported from: (a) France (b) Italy and (c) west Germany in each of the years 1974, 1975, 1976 and 1977 and the first six months of 1978, and the corresponding figures of exports from the United Kingdom to those countries in those years.

Mr Meacher gave the following information:

MOTOR VEHICLE COMPONENTS £ million

	France		west Germany		Italy	
	Imports (cif)	Exports (fob)	Imports (cif)	Exports (fob)	Imports (cif)	Exports (fob)
1974	17.7	16.8	69.2	46.5	8.5	16.5
1975	24.6	23.2	91.9	92.1	12.5	15.6
1976	35.0	38.2	141.7	144.0	17.0	27.4
1977	82.6	54.5	207.3	188.0	27.7	42.6
1978 [1]	48.9	34.7	111.3	80.2	15.2	20.7

Note: Motor vehicle components are not in all cases separately identified in the Overseas Trade Statistics, and the above figures therefore include an element of estimation.
[1] Jan-Jun.

Prestwick airport

Winifred Ewing (Moray and Nairn) asked the Secretary of State for Trade, what proposals he had for the future development of Prestwick airport for increased flights, in view of the intrinsic meteorological advantages enjoyed by the location of Prestwick airport; and what plans had been considered for better links to and from the airport by express train service to Glasgow.

Mr Clinton Davis answered that the British Airports Authority was holding a conference in Glasgow on 20 November to review the considerations affecting the distribution of air traffic among the Scottish lowland airports. This would enable all those concerned to express their views on the issues involved including those to which the questioner had referred. More generally, the government's policy was that the role of Prestwick and other airports in Scotland should be a matter for the proposed Scottish assembly.

Microprocessor applications project

Kenneth Warren (Hastings) asked the Secretary of State for Industry, how many applications had been put forward for consideration by his department's microprocessor applications project; how many had been approved; and what was the total approved expenditure involved.

Mr Cryer replied that the department had received a substantial number of inquiries about the microprocessor applications project announced on 4 July 1978. Consideration was being given to 80 formal applications under part C of the scheme relating to project support. Financial approval had already been given to 10 of those cases representing a potential contribution of about £1 million towards total project costs in excess of £3 million.

Cobalt supplies

Peter Hardy (Rother Valley) asked the Secretary of State for Industry, if he was satisfied that the supply of cobalt required by British industry was currently sufficient; that the supply was likely to continue at an adequate rate; and what steps he was taking to secure this.

Mr Williams said that he was aware that the supply of cobalt to British industry was less than most UK consumers of cobalt wanted. This was because international demand for cobalt far outstripped current supply and Zairean cobalt was rationed. His department was considering urgently how regular and sufficient supplies of cobalt for British industry could be secured.

Rate of return on capital

Nigel Lawson (Blaby) asked the Secretary of State for Industry, whether he would publish data on the basis used in table I of the article 'Companies' rate of return 1960-77' in Trade and Industry *of 22 September, giving information for the rate of return on capital for North Sea exploration and production activities, for industrial and commercial companies, and for manufacturing companies (both excluding North Sea activities) for the years up to and including 1977.*

Mr Cryer said that North Sea exploration and production activities were not part of manufacturing and, therefore, were excluded from the figures for manufacturing companies published in table 1 (columns 4, 5 and 6) of the article referred to. Rates of return for the activities of industrial and commercial companies other than North Sea activities were given in the table below. Rates of return on capital for North Sea activities as a separate sector and in comparison with those published in the article and in the table below were not very meaningful. Development in the North Sea had been rapid and there were long lags between investment expenditure and associated production and profits. Profits were currently accruing from only a relatively small part of the North Sea capital stock but under national accounting conventions the rate of return was calculated on the whole of the capital stock. The resulting rates of return could not therefore be easily compared with those in the article or given below which were not, to the same extent, affected by such lags.

RATES OF RETURN ON CAPITAL EMPLOYED FOR INDUSTRIAL AND COMMERCIAL COMPANIES *EXCLUDING* THEIR NORTH SEA ACTIVITIES

%

	At historic costs (1)	At replacement costs: Before providing for stock appreciation (2)	At replacement costs: After providing for stock appreciation (3)
1966	14.5	11.1	10.3
1967	14.1	11.1	10.6
1968	15.0	11.6	10.4
1969	15.1	11.5	10.1
1970	14.4	10.4	8.7
1971	15.0	10.3	8.7
1972	15.8	10.3	8.6
1973	17.3	10.4	7.2
1974	17.1	9.1	4.0
1975	15.5	7.0	3.4
1976	17.3	7.4	3.6
1977	16.4	6.6	4.0

Note: For years up-to-and-including 1965, the figures are identical to those published in table 1 (columns 1, 2 and 3) of the article.

Costs of public bodies

Nigel Lawson (Blaby) asked what was the estimated cost to public funds in 1977-78 of the Price Commission, the Office of Fair Trading, and the Monopolies and Mergers Commission; and what was the estimated cost to the firms and industries concerned of preparing evidence for and participating in the investigations carried out by these bodies.

Mr Hattersley replied that the figures, excluding the cost of allied services, were as follows:

Price Commission: £4.9 million (prov)
Office of Fair Trading: £0.6 million
Monopolies and Mergers Commission: £0.6 million

It is not possible to make an estimate of the cost to firms and industries. Costs had to be balanced against the benefits derived generally from the work of those bodies.

Funeral charges

Robin Corbett (Hemel Hempstead) asked the Secretary of State for Prices and Consumer Protection what progress had been made on introducing a code of practice for funeral directors as recommended by report 22 from the Price Commission on funeral charges published in February 1977.

Mr Maclennan said negotiations on a code of practice were proceeding between the Office of Fair Trading and the organisations concerned. Progress had been made although agreement had yet to be reached on a few issues. Provided these issues can be speedily resolved, a code of practice could be finalised shortly.

British Leyland

Frank Hooley (Sheffield, Heeley) asked what holdings or enterprises were owned or managed by British Leyland outside the United Kingdom.

Ministers

Department of Industry

Secretary of State: Eric Varley
Ministers of State: Alan Williams
Gerald Kaufman
Parliamentary Under-Secretaries of State: Robert Cryer
Leslie Huckfield

Department of Trade

Secretary of State: Edmund Dell
Parliamentary Under-Secretaries of State: Michael Meacher
Stanley Clinton Davis

Department of Prices and Consumer Protection

Secretary of State: Roy Hattersley
Minister of State: John Fraser
Parliamentary Under-Secretary of State: Robert Maclennan

Mr Huckfield gave the following information:

SUBSIDIARY COMPANIES (wholly owned unless otherwise indicated)

Company	Country of registration or incorporation
Leyland Austria Ges mbH	Austria
NV Leyland Motors SA	Belgium
NV British Leyland (Belgium) SA	Belgium
NV Leyland Industries Belgium SA	Belgium
Leyland – DAB A/S	Denmark
British Leyland France SA	France
Leyland GmbH	West Germany
British Leyland Nederland BV	Holland
British Leyland Italia SpA	Italy
Leyland Espana SA	Spain
British Leyland (Sweden) AB	Sweden
British Leyland Motors Canada Ltd	Canada
British Leyland Motors Inc	United States
Leyland Motors (Ghana) Ltd (60% ord)	Ghana
The Leyland Motor Corporation (Malawi) Ltd	Malawi
Leyland South Africa (Proprietary) Ltd	South Africa
British Leyland International Services	Switzerland
Leyland Albion (Tanzania) Ltd	Tanzania
Industrie Nationale Zairoise des Automobiles Leyland (78.5% ord)	Zaire
Leyland Motors (Zambia) Ltd	Zambia
Ashok Leyland Ltd (59.6% ord)	India
Ennore Foundries Ltd (70.8% ord)	India
Leyland Motor Corporation of Australia (Australian Preference shares held by minotiries)	Australia

TRADE INVESTMENTS (held by subsidiary companies)

Company	% Holdings	Country of registration/ incorporation
Unlisted		
Dansk Oversoisk Motor Industri A/S	25.0	Denmark
Oy Suomen Autoteollisuus AB	10.0	Finland
British Leyland De Portugal – Automoveis Limitada	20.0	Portugal
British Leyland Switzerland AG	45.0	Switzerland
SS Leyland Diesel Iran	26.0	Iran
Leyland Motors Iran Company	6.7	Iran
BMC Sanayi ve Ticaret AS	26.0	Turkey
Leyland Kenya Ltd	45.0	Kenya
Leyland Nigeria Ltd	47.1	Nigeria
Leyland Japan KK	35.0	Japan
Listed		
Metalúrgica de Santa Ana SA	27.3	Spain
New Zealand Motor Corporation Ltd	13.3	New Zealand

Of the companies in which BL has trade investments only Leyland Kenya Ltd and Leyland Nigeria Ltd are managed by BL.

Letters to the editor

Letters to the editor should be addressed to the Editor, *Trade and Industry*, Room 437, 1 Victoria Street, London SW1H 0ET, and *not* to HMSO.

Technology news

Corrosion service joins offshore group

A recent enlargement of the British Offshore Research Group (Borg) now enables it to offer an even more comprehensive service to the offshore industry. It was announced on 27 October at the end of the European offshore petroleum exhibition in London that the National Corrosion Service had joined the group.

Borg was formed in 1977 to market the combined offshore engineering research facilities and knowledge of the UK research establishment. The founding members are the National Engineering Laboratory and National Maritime Institute of the Department of Industry, and the Department of the Environment's Hydraulics Research Station.

The group has a wide range of facilities for investigations on models or full-scale structures related to offshore problems. It can now provide consultancy services on corrosion protection.

Testing facilities include towing tanks, wave basins, wind tunnels, model-making workshops, heavy engineering and structural testing equipment. Tests can also be carried out under sea conditions using seaborne instrumentation and support craft.

Some of the group's recent work includes measurement of towing forces on offshore platforms; stability and launching tests using models; wave and current forces on structures; wind-flow measurements over helicopter landing pads; development of underwater hydrostatic tools and remotely controlled vehicles, and oil and gas glow measurements.

Borg's headquarters is based at the National Maritime Institute at Feltham. The address for further information is Borg, PO Box 10, Feltham, Middlesex TW14 0LN, telex 263118.

Offshore survey firm and NRDC develop submersible

Sub Sea Surveys Ltd of Barrow-in-Furness, with financial assistance from the National Research Development Corporation, has designed and built a small remote-controlled unmanned submersible. It is the first remote controlled vehicle (RCV) that has been totally designed and built by a company specialising in the operation of large survey and inspection RCVs and the company has used its extensive knowledge and experience in the design.

The company carefully examined many available devices but were unable to find one to meet the exacting requirements and at the right price. IZE, as the vehicle is named, was developed to satisfy the requirements for a low cost machine that incorporates ease of operation with high reliability and excellent serviceability.

Based around a tough monocoque frame, the vehicle has an aluminium base of water blocked tubing. Dual purpose cylinders provide buoyancy and house the electronics systems. Only 30 per cent of the available space will be used, leaving 70 per cent for additional sensors, if required. The 500 m of bright yellow umbilical cable supplied can be replaced on site in about six hours and does not involve any 'potting' of components.

The control console is ergonomically designed with a joystick thruster control giving great ease of operation. All vehicle functions are switched from the console, using a frequency/time multiplex system that has been proved in thousands of hours of field operation. The state of the vehicle's electric systems is continuously monitored on the front panel.

A wide angle, high resolution tv camera is mounted on a pan and tilt unit to give 360° vision with 90° tilt. Lighting is provided by means of high-efficiency thallium iodide lamps which give excellent penetration in poor visibility by matching light output wavelength to the transmission characteristics of sea water. IZE is the only vehicle of its size that is designed to carry a full range of sensors. For pipeline work, the vehicle can be fitted with the Sub Sea Surveys high-resolution trench profiler. Other options include side scan sonar, scanning sonar, and 35 mm still camera and flash.

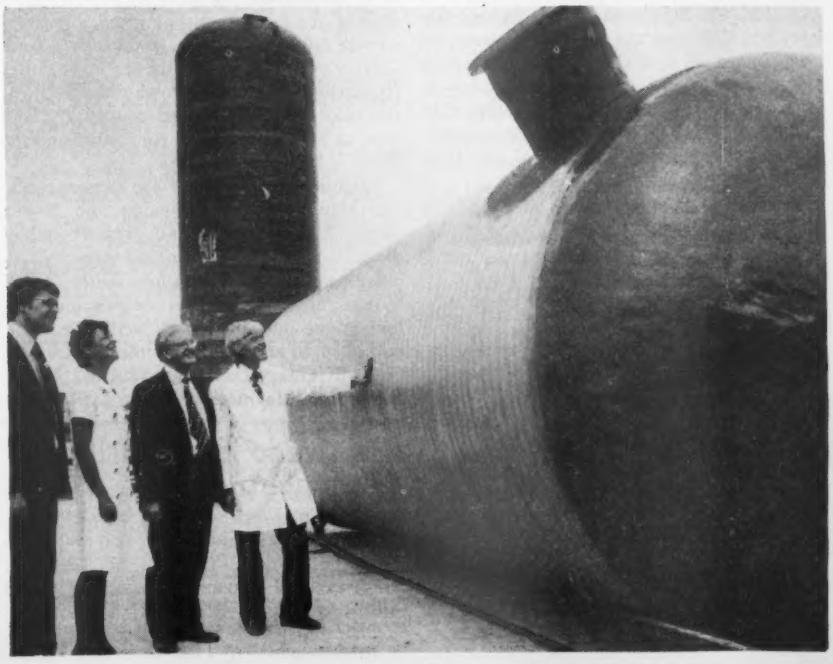
Units of measurement displayed

Definitions of units of measurement together with their realisation and use at the Department of Industry's National Physical Laboratory have been published by HMSO as a colour poster. The units of measurement are those of the preferred International System (SI).

Copies of the poster are available free from Information Services, National Physical Laboratory, Queens Road, Teddington, Middlesex TW11 0LW.

First container produced by Ferranti Resin

Les Oliphant (left), design engineer; Sue McKay, industrial officer for Peterlee Development Corporation; Fred Walmsley, managing director, Ferranti Resin Ltd; and Eddie Hutchinson, quality control manager, with the first glass fibre storage tank produced by Ferranti Resin Ltd, the new joint company recently formed by Ferranti Ltd and the National Enterprise Board. The 11 m by 2.5 m diameter container, was ordered by the Bolton Metropolitan Borough for use as a water storage tank at one of the borough's agricultural estates.



New products

Freepost reader service

For further information on items in this section, circle the corresponding number on the reader services page near the end of the magazine.

Precise measurement at the press of a button

H. W. Sullivan Ltd of Dover has produced a new automatic instrument for the precision measurement of electrical components. The AC5555 automatic component analyser is suitable for production and goods inwards inspection as well as laboratory applications.

The instrument accepts a wide range of components, whether they be resistors, capacitors or inductors, automatically selects the range and function, and displays the value and unit on two digital displays. When it is switched on, it is in the fully automatic mode and no setting-up procedure is required. This is the normal mode of operation and to test a component it is only necessary to connect it to the instrument and the value is displayed, irrespective of the type.

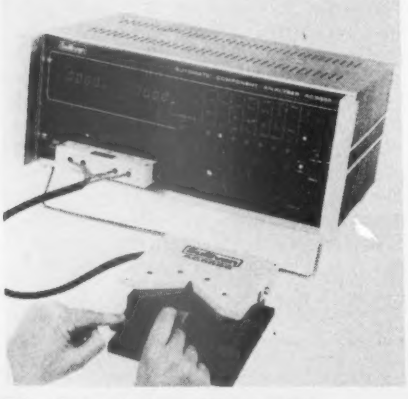
The method of operation is thus so simple that it is virtually impossible to make mistakes. The auto-function facility makes the instrument particularly useful for the identification of unknown components in laboratory or production areas, or for use by semi-skilled operators. For some spplications, such as the testing of a batch of components which have nominally the same value, the operator can, if required, lock the instrument into a particular range; this manual mode of operation gives a shorter response time of the display than that of the automatic mode.

Mains operated and with fourteen ranges, the AC5555 measures the parallel capacitance and conductance or the series inductance and resistance of the test component at a frequency of 1 kHz. The maximum reading on each display is 19999, and the instrument measures capacitance up to 200 μF with an ultimate resolution of 0.01 pF, while inductance may be measured up to 200 H with a resolution of 10 nH. Resistors can be measured either as resistance or as conductance, values of 100$\mu\Omega$ to 10 000 MΩ may be discriminated.

Dissipation factor may be displayed by depressing a switch and there is also a facility for applying a dc bias voltage to the component under test. The basic measurement accuracy of the instrument is ± 0. 1 per cent ± 1 digit, where 1 digit is 0.005 per cent of full scale. A special test jig and a lead set are both available as optional accessories. The test jig is extremely easy to use and accepts discrete components, with axial or radial leads, body length up to 95 mm.

Further information: circle 217

. . . it is virtually impossible to make mistakes.



Doubled output from tubular fabrics finisher

Wet-processed tubular knitted fabrics can be continuously dried and finished at rates of up to 225 kg/h on equipment developed by Samuel Pegg and Son Ltd of Leicester. The gas-fired machine operates at higher temperatures and pressures than the popular steam-heated versions in use round the world so that over twice their output can be achieved without sacrificing any control possibilities, says the manufacturer.

With its spring-loaded, belt-driven stretcher, the unit can be used to dry fabrics from 205 mm to 1 m wide to the width required thus minimising fabric wastage in subsequent operations. A simple handwheel permits width of the finished fabric to be adjusted even while the machine is running.

This is made possible by a system of positive overfeed control, in which the relative speed of the drive wheels supporting the stretcher frame can be varied. While the upper wheels are synchronised with the calender bowls, controlling the favric's output speed, the lower wheels can be run faster (producing a compacting effect that widens the fabric) or slower (tensioning and thus narrowing the web). At the same time, the knitted courses are kept level as loop distortion is eliminated and the fabric is free from bowing.

Facilities are provided for automatically untwisting and straightening the fabric. Adjustable calender bowl nip pressure enables different fabrics to be handled correctly. All other controls – power supply switch, on/off buttons, air-circulating fan controls, temperature gauge and thermostat setting control, output speed and overfeed controls – are conveniently grouped on a central panel.

Further information: circle 218

Electronic log identifies lost machine time

A microprocessor-based machine utilisation recorder for use on individual machines has been introduced by TDS Dextralog Ltd of Blackburn as an aid to increased productivity in manufacturing industry. Called the Dextralog BX, it collects, analyses and stores information on loss of machine time.

By providing precise data it pinpoints the areas most in need of corrective action. According to TDS Dextralog, these are more often areas such as maintenance time, material hold-ups or machine changes and are rarely directly attributable to the operator. Management action on the basis of accurate time loss measurement is estimated to be capable of saving an average of 10 to 20 per cent per machine.

Accuracy and visibility are two important attributes of the new device. Retrospective recording will not be accepted so that on-the-spot cause designation must be keyed in. The standard liquid crystal display is clearly visible to everyone and the information held is easily retrieved by anyone. This accessibility helps to create confidence in the device's impartiality. The BX operates in real-time and accumulates data on up to nine stop causes for as much as a week. In computing mode it will also calculate production for individual shifts.

Improved technical performance of machines, better use of skilled resources and reduction of the information collection overheads are just three of the tangible benefits offered by the Dextralog BX. In addition it makes the productivity concept more real to operatives, encourages delegation nearer to people who can do something about it and creates greater interest on the job. Above all it provides the means for those on the shop floor to ask management for the resources and methods needed to improve performance and establishes a logical information base for better wage and bonus schemes.

Further information: circle 219

Dextralog BX fitted to a machine finishing Parker ballpoint refill cases at Pressport Manufacturing Ltd. Its use led to a considerable increase in output.

Overseas trade news

BR agrees to co-operate with Chinese

Following discussions in Peking between a British Rail delegation and the Ministry of Railways of the People's Republic of China, both sides agreed that further arrangements will be made for a number of Chinese technicians to spend periods of study at the Railway Technical Centre, Derby.

They also agreed on further exchanges of senior study missions, while British Rail, at the request of the Ministry of Railways, will make outline proposals on the modernisation of the 90-mile railway line from Shumchun to Kwangchow (Canton).

It was also decided that further information will be exchanged on a variety of technical subjects which were explored in a preliminary fashion during the course of discussions.

In the course of its stay, the British delegation was received by Vice-Premier of the State Council, Kang Shih-En, as well as by Minister of Railways, Tuan Chum-Yi and Vice-Minister Wang Hsiao-Pin.

There were several days of talks with technical and administrative personnel of the Ministry of Railways on subjects ranging from the modernisation of trunk lines for high-speed passenger and freight operation to the continuous movement of bulk freight and a number of other aspects of railway technology and operation.

After the meeting in Peking, the delegation inspected railway installations elsewhere in China and had an opportunity to see the electrified line from Paochi to Chengtu.

It's the tallest stained-glass mural in the world

An export order for the tallest stained-glass mural in the world – 135 ft high – was announced in Dubai on 30 October by Charles Clark, managing director, Goddard and Gibbs Studios of Shoreditch, London.

News of the order was given by Mr Clark at the Middle East construction exhibition where, together with over 90 other British companies, Goddard and Gibbs were in the joint venture sponsored by the British Overseas Trade Board.

Mr Clarke said that the order was the largest single contract the company had ever received in the Middle East – or elsewhere. The exhibition had provided the firm with a shop window to show stained-glass to prospective buyers from all the Gulf states.

Weighing over 20 tons, the mural will be installed in June 1979 in the interior well of the 12 story de luxe service apartments being built for Fouad Abbas in Dubai. Designed by John Lawson, Goddard and Gibbs' chief artist, the mural is based on the seventeenth century Indian mogul style – of which the Taj Mahal is the best known example.

The mural shows a floral design with birds unobtrusively in the background. The colour scheme for the whole feature starts with rich dark rubies and purples at the base and changes through violet, mauve and other shades to a flame colour on the top panel.

The stained-glass consists of four panels each about 17 ft high and 8 ft wide, flanked by pairs of similar panels each 8 ft high and 4 ft wide. The large panels are alternated with five smaller panels about 8 ft high and 5 ft wide.

The framework for the mural, designed by David Gillespie Associates of Farnham, will be fastened on steel channels running up the full height of the well in the apartments.

The final surface of the glass-fibre mouldings will be set with rare granites, quartz and cushed colour stones to form a rich texture complementing and contrasting with the jewel-like quality of the stained glass.

Leyland wins £4m Singapore contract

Singapore Bus Service has initialled the final clause of an order for 200 Leyland Atlantean double-deck bus chassis, complete with engine and transmission. In all, the contract is worth £4 million to Leyland.

Delivery is scheduled at 20 units a month starting in February and March 1979. Twenty Atlanteans entered service for SBS in June last year on a trial basis, and have proved efficient and profitable. This has led to a significant change of policy on the part of SBS who have traditionally used single-deck buses.

The work will be carried out at the Leyland Vehicles works in Lancashire. The Atlantean AN68 chassis has a rear-mounted Leyland 0.680 engine and a five-speed pneumocyclic gearbox with Leyland fully-automatic control.

UK-supplied bodywork for these buses will add a further £2 million to the total value of the deal.

Luton seminar on Japan

Opportunities for penetrating the Japan market will be discussed at a seminar on 15 November organised by Luton chamber of commerce in conjunction with the British Overseas Trade Board's Exports to Japan Unit. Discussion will include facilities available to help the exporter and the special characteristics of trading in Japan.

The seminar will be chaired by Derek Gorton, manager of Barclays Bank International, Luton, who is also a member of the BOTB's Japan advisory group and formerly manager of Barclays Bank International in Tokyo.

The seminar will be held from 15.00 to 17.30 hours at the Council Chamber, Luton Chamber of Commerce and Industry, George Street West, Luton LU1 2BT. The fee is £1.50. Details are available from Jill Clements at the Luton chamber (tel. Luton 0582) 23456/7.

UK delegation visits Mexico and Cuba

Ways of expanding the level of UK-Mexican trade in both directions, and on possibilities for co-operation on joint ventures between UK and Mexican firms, were discussed at the third meeting of the British/Mexican Joint Commission on Economic and Industrial Co-operation held in Mexico City, 3 to 6 October.

The British delegation was led by Miss Mary Lackey, under-secretary at the Department of Trade, and the Mexican delegation by Licenciada Guillermina Sanchez Meza de Solis, deputy minister at the Mexican Ministry of Foreign Affairs.

Miss Lackey also had talks with Mexican ministers and senior Mexican government officials on a wide range of matters of mutual interest. Members of the British delegation made a number of industrial visits.

The commission was set up under a memorandum of understanding on economic and industrial co-operation signed in London on 26 April 1976 between the governments of the two countries. The next meeting of the joint commission will be held in London in 1979 at a date to be agreed.

At the third session of the Anglo-Cuban Joint Commission for Economic and Industrial Co-operation, held in Havana from 10 to 13 October, the Cubans expressed interest in co-operating with UK firms to develop manufacturing operations in Cuba, with possible opportunities for marketing in third countries.

After the plenary meeting, the joint commission divided into two working groups on economic and industrial matters. The discussions were held in a friendly and open atmosphere and reviewed the development of co-operation between the two countries in the period since the last meeting of the joint commission.

Again the UK delegation was led by Mary Lackey and the Cuban side by the vice president of the State Committee for Economic Co-operation, Ernesto Melendez-Bachs.

Outside the formal meeting of the commission, Miss Lackey met Cuban ministers for

continued on page 225

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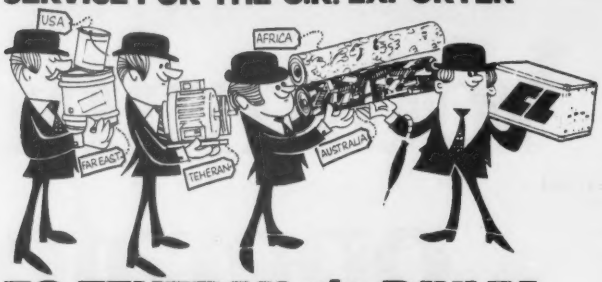

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discussions and the delegates undertook a programme of visits. The joint commission was set up under the agreement for economic and industrial co-operation signed by the two governments on 19 May 1975.

Before the delegates left for Mexico and Cuba they attended a special meeting of the Latin American trade advisory group at Canning House, designed to give interested UK companies an opportunity to talk to the delegates and let them know matters they thought should be raised during discussion. A report back session was held on the delegation's return.

ECGD guarantees first buyer credit to Swaziland

The Export Credits Guarantee Department has guaranteed a £4 million loan which Barclays Bank International acting on behalf of Barclays Bank has made available to the Royal Swaziland Sugar Corporation. This is the first ECGD guaranteed buyer credit loan to Swaziland.

The loan will help finance contracts totalling £4.8 million awarded by the Royal Swaziland Sugar Corporation to Tate and Lyle Engineering and its subsidiary, A. and W. Smith of Glasgow. Under the contracts A. and W. Smith will be the principal supplier of plant, equipment and associated services for the Simunye raw sugar factory near Tshaneni, Swaziland.

The factory is designed for a peak throughput 6000 metric tons of sugar cane a day with a production capacity of 111 000 metric tons of raw sugar a year. It is due to be commissioned in summer 1980.

More ECGD backing for Brazilian contracts

A £13.7 million loan which Morgan Grenfell has made available to Aco Minas Gerais SA (Acominas) of Brazil, is to be backed by the Export Credits Guarantee Department.

The loan will help finance a contract awarded by Acominas to Davy Ashmore International for the supply of structural steelwork and supervision of erection of five mill buildings at the integrated iron and steel works complex at Oure Branco in the state of Minas Gerais, Brazil.

This is the third-ECGD guaranteed loan to Acominas to help finance contracts awarded by Acominas to Davy Ashmore International. A loan agreement for £150 million was signed in December 1976 and one for a further £15 million in March this year. Morgan Grenfell also arranged the finance for these loans.

London chamber to hold Sweden trade prospects conference . . .

UK-Swedish trade prospects are to be discussed at a special one-day conference being organised by the London Chamber of Commerce and Industry on Thursday 23 November.

Principal speaker will be Johan Nordenfalk, Swedish Under-Secretary of State for Trade, whose subject will be the current trade situation between Sweden and Great Britain.

Other speakers will cover Volvo's purchasing needs, case histories from GKN and Black and Decker as well as marketing and distribution, finance and investment.

Conference chairman will be John Dahl, the Swedish trade commissioner in the UK, and there will be a panel of experts for questions and discussion which will include Ake Norling, deputy lord mayor of Gothenburg and Alan J. Whysall, managing director of Wyvern Export Promotions.

Further information is available from Howard Eatwell at the London Chamber, tel. 01-248 4444 ext. 30.

. . . and Netherlands seminar

In conjunction with the Netherlands-British Chamber of Commerce, the London Chamber of Commerce and Industry is also organising a seminar, "Business opportunities in the Netherlands" at the Cafe Royal on 5 December.

Among the speakers will be representatives from Dutch government and commerce, and topics to be covered will include, investments in manufacturing industries, marketing consumer and industrial products, investment incentives, methods of transporting goods to the Netherlands, and the opportunities for service industries.

Further information is available from Howard Eatwell on 01-248 4444 ext. 30.

ECGD cover for overseas fairs

As a supplement to the ordinary insurance policy exporters have with Export Credits Guarantee Department (ECGD), cover is available for goods exhibited at fairs overseas against the rather special risks involved.

The standard cover includes sales at overseas fairs
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UK import developments 1970-77

Import developments in the UK from 1970-77 were the subject of a paper prepared by the Department of Trade for the National Economic Development Council (NEDC) meeting of 9 October. It followed a joint memorandum presented to NEDC on 3 May by the Chancellor of the Exchequer and the Secretary of State for Industry designed to obtain views on a number of ideas for import substitution.

In a memorandum to the paper the Secretary of State for Trade Edmund Dell points out that the period under review, which takes in the shock to international trade and the whole world economy of the fourfold increase in oil prices in 1973-74, and the subsequent, and in part at least consequential, world recession, is a particularly difficult one to analyse.

The UK's trade performance, he said, declined in the years 1971 to 1973 and, although this was largely the effect of the oil price rise, fell further in 1974. 'Since then' Mr Dell said, 'there has been some recovery partly because of North Sea oil, but partly also because of an encouraging performance in exports. Particularly interesting in this connection is that following the sharp recovery in the export/import ratio for manufacturing industry in 1975 (see table 2), the ratio and the associated trade surplus have been maintained in the following two years'.

Mr Dell added, 'I do not wish to minimise the significance of the rise in import penetration in certain sectors or some disturbing developments in the total picture so far this year. There is enough that is worrying in the figures to underline the importance of continuing the effort to improve the competitiveness of our manufacturing industry'.

The paper, 'Import developments 1970-1977' (reproduced here), is largely a factual and statistical analysis, but it also records, in the 'industrial analysis' section, cases where selective controls have been applied. Although the emphasis is on imports, it also attempts to set developments in this area in the context of the UK's total trade performance – in exports and imports.

The memorandum by the Chancellor of the Exchequer and the Secretary of State for Industry on 3 May drew the attention of the council to the high and rising level of import penetration in this country. This paper provides a largely factual analysis of the development of imports into the UK between 1970 and 1977. The analysis concentrates largely on changes in import penetration (and also export performance) by industry group.[1] Given the large number of industries involved, the commentary has, of necessity, had to be selective; in the main it concentrates on the areas covered by sector working parties.

Over the period 1970 to 1977, the UK output has grown less rapidly than in other major industrial countries (table 1). In common with other industrialised countries the importance of trade in relation to gdp has increased in the UK. Indeed, as table 1 shows, the UK is more dependent on trade in goods and services than the other four countries considered.

Britain's trade performance, as measured by the ratio of the value of exports to imports, declined over the period 1971 to 1973 at a time when the major economies of the world were expanding strongly together, and fell further in 1974 with the effect of the oil price rise (see table 2). Since then, however, there has been some recovery with, in the latest two years, favourable export performances and the effects of North Sea oil.

The volume of imports rose by just under one-third between 1970 and 1977 but the volume of exports rose by almost a half. However, over this period the terms of trade deteriorated, and in 1977 the visible trade balance was worse than in 1970 although much improved as compared with 1973-76.

The trade performance of manufacturing industry[2] as a whole, which is used as a basis for the detailed analyses in the paper, followed a not dissimilar course to that of total trade, with the export/import ratios weakening by much the same degree over the period. Despite this reduction in the export/import ratio, it is interesting to note that the rise in the overall import penetration of manufacturing industry in the 1970s has been broadly matched by an increase in the export sales ratio. This general picture does, however, mask wide movements in the performance of individual industry groups, with particularly favourable trends in food and chemicals, and adverse ones in vehicles, electrical consumer goods and iron and steel.

[1] Import penetration is defined in this paper as the value of imports as a percentage of home demand: the export sales ratio as the value of exports as a percentage of manufacturers' sales. An article introducing these statistics was included in the August 1977 issue of *Economic Trends*. More recent figures are given in Business Monitor M12.

[2] Orders III to XIX of the standard industrial classification, 1968. It should be noted that this is a wider coverage than 'manufactured goods' as defined in the overseas trade statistics (ie SITC sections 5 to 8), since it includes the food, drink and tobacco and the coal and petroleum product industries.

UK's trade performance

The UK's trade performance during the 1970s has been markedly affected by a number of factors. The broad picture is one of deterioration up to 1974-75 and then recovery afterwards. The main features are readily evident from table 2:

- ☐ The sharp growth in the volume of imports in 1972 and 1973, a marked reduction in 1975 and the subsequent increase to a level in 1977 which was a little below that in 1973-74
- ☐ The growth in the volume of exports which began in 1973, and, apart from an interruption in the recession year of 1975, has continued strongly particularly following the sharp fall in sterling in 1976
- ☐ The deterioration in the visible balance between 1971 and 1974, to a massive £5 billion[3] deficit in 1974 largely as a result of the oil price rise
- ☐ The sharp reduction in the visible deficit, reflecting movements in exports and imports and helped by North Sea oil, to £1.7 billion in 1977.

The most noticeable feature of the growth of imports is the part played by finished manufactured goods, which in volume terms more than doubled over the period. Imports of semi-manufactures rose, by over half, in volume terms, but fuels (reflecting the advent of North Sea oil in recent years) and basic materials fell, while the volume of food, beverages and tobacco remained relatively unchanged over the period. As a result, imports of manufactures (SITC sections 5 to 8) accounted for a much greater proportion of the total value of imports – 59 per cent in 1977 compared with 51 per cent in 1970. On the export side, the volume of exports of manufactures rose by just over 50 per cent between 1970 and 1977. In terms of value, manufactures accounted for some 82 per cent of the total in 1977, compared with 85 per cent in 1970.

Figures in table 2 and the graph provide

[3] A billion is defined here as a thousand million.

Table 1 GDP and industrial performance in industrial countries Gdp 1970 = 100

	UK	US [1]	Japan [1]	West Germany [1]	France
1970	100	100	100	100	100
1971	102	103	107	103	105
1972	104	109	117	107	111
1973	111	115	128	112	118
1974	109	113	127	113	120
1975	107	112	130	110	120
1976	110	119	138	116	127
1977	111	125	145	119	129
Exports of goods and services as percentage of gdp (based on current price data)					
1970	23	6	11	21	16
1976	29	8	14	26	20
Imports of goods and services as percentage of gdp (based on current price data)					
1970	23	6	10	19	16
1976	30	9	13	24	21

[1] Gnp at market prices

Table 2 **Statistics of UK trade** [1]

	Value (£ billion) (balance of payments basis)				Value (£ billion)				Volume (balance of payments basis) 1970 = 100 [3]					
					Manufacturing industry [2]									
	Total exports	Total imports	Visible balance	Export/ import ratio	Exports	Imports	Balance	Export/ import ratio	Total exports	Percentage change [4]	Total imports	Percentage change [4]	Export/ import ratio	Terms of trade 1970 = 100 [3]
1970	8.1	8.1	−0.0	100	6.9	6.4	+0.5	108	100		100		100	100
1971	9.1	8.8	+0.3	103	7.9	7.0	+1.0	114	107	7	104	4	103	101
1972	9.5	10.2	−0.7	93	8.2	8.3	−0.0	100	106	—	116	11	92	101
1973	12.1	14.5	−2.4	84	10.3	11.8	−1.5	87	122	15	132	14	93	89
1974	16.5	21.7	−5.2	76	14.0	15.8	−1.8	89	130	7	133	1	98	78
1975	19.5	22.7	−3.2	86	16.9	16.5	+0.4	103	125	−4	121	−9	103	83
1976	25.4	29.0	−3.6	88	21.7	21.2	+0.4	102	137	10	128	6	107	82
1977	32.2	33.9	−1.7	95	26.6	25.9	+0.7	103	148	8	130	1	114	84

[1] Figures are on a balance of payments basis except those for manufacturing industry which approximate to an Overseas Trade Statistics basis. [2] Orders III to XIX of SIC; this is a wider coverage than manufactured goods as defined in the Overseas Trade Statistics, since it includes the food, drink and tobacco and the coal and petroleum products industries. Also the figures relate to trade in the principal products of manufacturing industry. [3] Existing 1975 = 100 series re-referenced to 1970 = 100. [4] On year earlier.

evidence of the performance of trade in the principal products of manufacturing industry since 1970. As with total trade, there was a sharp decline in the export/import ratio between 1971 and 1973 with deficits on the manufacturing trade balance in 1973 and 1974. There was a marked recovery in 1975, since when the ratio has been maintained, and a surplus achieved in each of the last three years. The particular feature of the graph, which compares import penetration with export sales performance, is that while these ratios have both risen from around 18 per cent in 1970 to 25 per cent in 1977, two distinct, non-coincident, cycles are evident reflecting different stages in the development of the UK economy over this period.

Reasons for increases in import penetration were analysed in the 3 May paper. The paper also stated that rapid import growth could not be explained, in the main, by rising economic activity and changes in price competitiveness, and referred to other factors such as inadequate capacity and product development and poor marketing and delivery as contributory reasons.

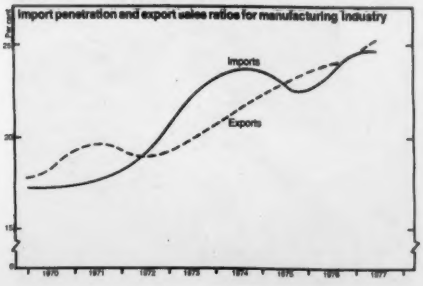
Industrial analysis

This section considers the effect of changes in the demand for imports, and exports, in broad sectors of manufacturing industry. Table 3 sets out the import and export ratios for the different industries within manufacturing for the years 1970 to 1977.

Food and drink

While the food and drink sector (part of order III – 10 per cent of manufacturing output) has long been a substantial net importer, import penetration has been held around its 1970 level through the later years and export proportions have slowly increased.

Import penetration has been noticeably reduced in the bacon curing, meat and fish products and in the vegetable and animal oils and fats industries, both of which have also increased export shares, as have several other industries within the sector. The rises in import penetration for the sugar industry are largely attributable to steep increases in world prices and shortages of home-produced beet.



Similarly, rising world cocoa prices have contributed to the increase in import penetration for the cocoa, chocolate and sugar confectionery industry, though this has been balanced by a similar increase in the export proportion.

Chemicals

The chemical industry (order V – 8 per cent of manufacturing output) achieved a growing positive trade balance over the period. Exports steadily expanded although there was some slackening after 1974 with the general depression in the world economy following the rise in oil prices. Imports also increased but at a generally slower rate. The large upsurge in 1974, particularly of synthetic resins and plastic materials from the EEC, was possibly caused by a shortage of home capacity but in the event much of these imports were, reportedly, the result of anticipatory buying and finished up as additional stock, which in turn contributed to a subsequent rapid decline in output.

In more recent years it is likely that the larger flow of imports reflected the continuing trend towards increased international trade stemming from greater specialisation, which also contributed to the increased exports by the industry. Imports into the home market were also probably stimulated by low prices for some products as the result of over capacity in western Europe. The problem of imports of chemicals is being studied in detail in the sector working parties.

Metal manufacture

Some parts of the metal manufacturing sector (order VI – 8 per cent of manufacturing output) have achieved greater success than others in overseas trade. Though export proportions have moved erratically there has been some improvement since 1974 and import penetration, which grew to a maximum in that year, has remained fairly steady subsequently.

Iron and steel has shown a similar movement to the overall picture, though import penetration of steel tube, which increased rapidly from 1972 to 1975, particularly to meet North Sea development needs, had declined again by 1977.

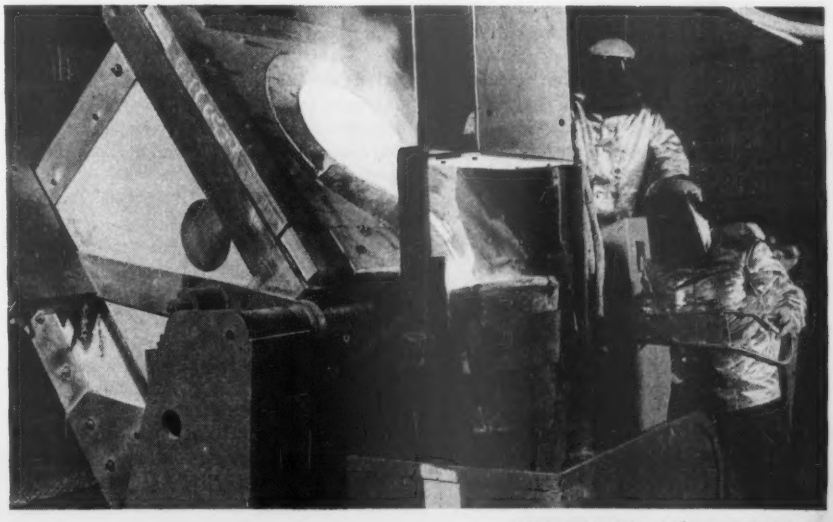
During 1978, as a result of the so-called 'Davignon Plan', restraints on imports of steel into the community market have been intensified. In the non-ferrous part of the sector, experience has been varied: the emergence of a domestic aluminium smelting industry allowed export proportions to double between 1970 and 1977 while import penetration changed little. For other non-ferrous metals there have been no strong trends in either import penetration or export performance.

Mechanical engineering

Traditionally the engineering industries are those in which the UK has a major commitment in overseas trade. Import penetration in mechanical engineering (order VIII – 13 per cent of manufacturing industry) has grown by 11 per cent from 19 to 30 per cent and the export proportion by 12 per cent from 33 to 45 per cent. Thus there has been little change in overall performance.

Within the sector, however, are industries with wide variations in overseas trade performance. Some seem to have followed what may

Metal manufacture: some parts achieved greater success than others.



Mechanical engineering: general upward movement in export shares.

be part of a cyclical path over this period, with import penetration falling around 1970-71, and then rising rather irregularly. Export shares moved in a more random fashion but with a tendency to fall in 1972-73. Again there was a general upward movement towards the end of the period. This pattern is conveniently illustrated by the figures for metal-working machine tools, but it is also apparent in other industries.

In the industrial engines industry, import penetration conformed to the cyclic pattern already described, but the export share grew to a peak in 1973 and has since declined, reducing a little the substantial trade surplus for the sector. Industrial plant and steelwork has seen a decline in import penetration since 1975 and very strong export growth from 1974. Office machinery, where import penetration grew steeply in 1976, saw a further increase last year, coupled with a strong rise in export proportion.

For some industries within mechanical engineering, the activities of multinational companies have resulted in increases in both import penetration and export ratio. One such industry is construction and earth-moving equipment, for which the effect on exports has been most pronounced.

Instrument engineering

This sector (order VIII – 2 per cent of manufacturing output) is dominated by the scientific and industrial instruments and systems industry, where import penetration rose rather faster than the export share between 1970 and 1975. Since then, however, there has been little further movement. For photographic and document-copying equipment, where there is substantial trade in both directions (including a large re-export element which distorts the measurement of import penetration and export sales ratios) import penetration more than doubled between 1970 and 1977. The export share also showed a large increase.

Electrical engineering

The third of the engineering sectors is electrical engineering (order IX – 9 per cent of manufacturing output). While import penetration has increased steadily through the seventies, overall the substantial positive trade balance has been maintained. But changes in the total figures do mask very different experience for capital and intermediate goods, domestic electrical appliances and consumer electronics.

In the case of both domestic electrical applicances and consumer electronics import penetration doubled between 1970 and 1974. It then remained fairly static until 1977 when it increased quite sharply.

Improvements in the export ratios have been much less rapid with the result that there has been a considerable decline in the trade balance for the consumer goods industries. Major factors contributing to the increase in imports have been the boom in consumers' expenditure on consumer electronics in the early seventies following the relaxation of hp, rental and other controls, and the success of Italian manufacturers in offering low cost domestic electrical appliances to the UK market.

Imports of Japanese tv sets and hi-fi equipment are now subject to restraint. For some new products such as video recorders, imports are now reaching the UK market and there is no UK manufacturing capacity.

The industries making capital and intermediate goods within the electrical engineering sector experienced a rapid increase in import penetration from 1970 to 1974, followed by a slower rate of increase between 1974 and 1977. However, in all cases export shares rose faster than import penetration.

A major factor in the growth of imports of capital goods has been the high proportion that is imported for further processing and subsequently exported. For computing equipment in particular, the international nature of the industry involves relatively high imports, though with substantial exports too.

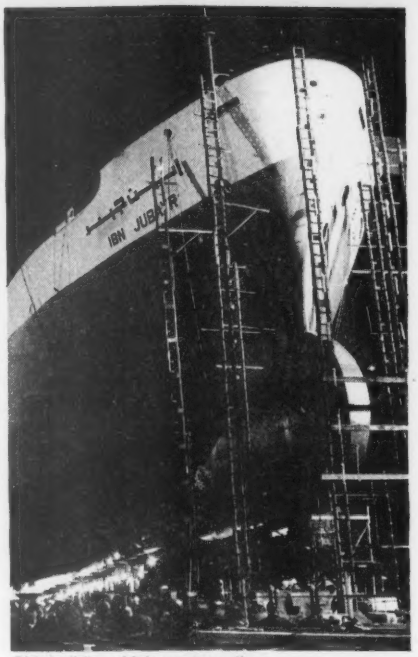
The high level of import penetration for electrical machinery in 1973 and 1974 reflected heavy demand for stand-by electric generators – which UK industry was unable to supply at the time – following public electricity supply problems.

For the sector as a whole, therefore, improved trade performance by the producers of capital and intermediate goods has offset the deteriorating trade balance for the consumer goods industries.

Shipbuilding

In the last few years there has been a substantial fall in import penetration in the shipbuilding industry(order X – 2 per cent of manufacturing output). This reflects a change in the requirements of the British shipping industry, which currently needs no further large tankers which were available more cheaply elsewhere.

Exports, which had declined in importance during the world wide boom in the mid-1970s, have recovered in recent years and the ratio in 1977 must be regarded as high in view of the difficulties of obtaining orders in a world wide slump.



Shipbuilding: high export ratio.

Vehicles

The most dramatic change between 1970 and 1977 in the vehicle sector (order XI – 10 per cent of manufacturing output) occurred in the import ratio of the motorcycle industry, and there has also been a substantial fall in the export ratio in this period.

The import ratio for the motor vehicles industry was fairly low in 1970 and the reasons for the rapid rise since then are well known.

In this period, also, there was a sharp rise in the imports of components associated with the number of foreign cars in use in the UK, as well as the increased imports by multi-nationals. Imports of all motor vehicles from Japan are subject to restraint, previous arrangements having covered only motor cars.

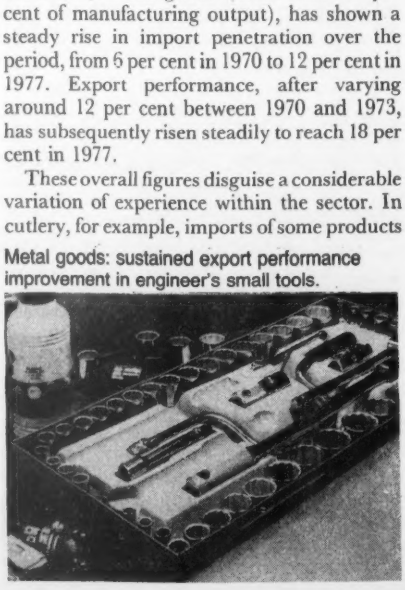
Exports of the vehicles sector have maintained a high level during the period 1970-77 despite the slow fall in wheeled tractors.

Metal goods n.e.s.

The last sector of the engineering and allied industries, metal goods (order XII – 6 per cent of manufacturing output), has shown a steady rise in import penetration over the period, from 6 per cent in 1970 to 12 per cent in 1977. Export performance, after varying around 12 per cent between 1970 and 1973, has subsequently risen steadily to reach 18 per cent in 1977.

These overall figures disguise a considerable variation of experience within the sector. In cutlery, for example, imports of some products

Metal goods: sustained export performance improvement in engineer's small tools.



take by far the major part of the UK market (surveillance import licensing was introduced earlier this year). Cutlery, together with hand tools and implements and industrial fastners (ie nuts, bolts, screws, etc), showed the most marked rise in import penetration. There was a sustained improvement in export performance in engineers' small tools and gauges and in hand tools and implements.

Textiles, clothing and footwear

Trade performance in both the textile and clothing industries (orders XIII and XV – 10 per cent of manufacturing output) deteriorated between 1970 and 1977 although there was some improvement in clothing in the last two years.

Import penetration in the textile industry increased each year between 1970 and 1977 and more than doubled over this period.

The potential benefit of the original multi-fibre arrangement was to a considerable extent nullified by the depressed trading conditions following the oil price rise at the end of 1973.

In addition to the continued expansion of imports from developing countries, mainly woven cloth of cotton and cotton mixtures, knitted and woven clothing, there were also increased imports from out trading partners in the EEC and from members of Efta.

In the last couple of years, however, most of the clothing sectors have shown a considerable improvement reflecting increased exports, particularly to the rest of the community, as a result of improved competitiveness and added marketing effort. The same pattern is apparent for those textiles sectors which produce finished goods: hosiery and other knitted goods, carpets and made-up textiles.

The upstream textile industries have fared less well in the face of low demand and continued pressure from imports and have suffered heavy declines in employment.

There have been particularly large increases in import penetration in spinning and doubling on the cotton and flax systems and in the weaving of cotton, linen and man-made fibres. The export sales ratio of these sectors increased at a slower rate. For 1978 and subsequent years much more extensive schemes for the control of imports of textiles and clothing from low-cost sources have been introduced as a condition of the community renewal of the MFA.

The footwear industry has also seen import penetration double over the seven-year period. The industry has had to contend with imports – now subject to restraints – of leather footwear from eastern Europe.

Imports from sensitive sources are subject to surveillance licensing and imports from Taiwan have been sharply cut back by a quota established last year. Quality imports from Italy still constitute a challenge to the industry.

Building materials, pottery, glass, etc

Building materials (order XVI – 4 per cent of manufacturing output) are not traded internationally in significant quantities because transport costs are high; nevertheless there has been a considerable rise in the export share for refractory goods.

Over the past four years there has been little change in either import penetration or export share for pottery. Import quotas exist on some pottery products.

1974 stands out as a year of exceptionally high penetration by imports in the glass container sector; this was due to a number of factors, including abnormally high home demand and capacity constraints. Export shares for this industry have shown little change in recent years.

Timber, furniture, etc

The high level of import penetration in the timber and furniture sector (order XVII – 3 per cent of manufacturing output) is mainly the result of the inclusion of imports of sawn timber, the form in which most of the sector's necessarily-imported raw materials arrive. The overall level has not changed greatly in the seventies, but both import penetration and export proportion in the products of the furniture and upholstery industry have grown quite rapidly from very low levels, with the export share improving particularly in more recent years.

Paper, printing, publishing

As in the case of the timber sector, the high level of import penetration for paper, printing and publishing (order XVIII – 9 per cent of manufacturing output), particularly for products of the paper and board industry, can be attributed in part to imports of wood-pulp.

Since 1974 there has been little change in import penetration and there has been an encouraging increase in the export share for most of the industries in the sector since 1975. Within the EEC-Efta agreements, duty-free quotas for imports of paper and board may be increased by 5 per cent a year. But because the UK industry is strongly opposed to such increases, the UK has negotiated increases considerably less than the maximum permitted.

Other manufacturing

This residual sector (order XIX – 4 per cent of manufacturing output), which covers a variety of unrelated industries, has experienced a fast growth in import penetration and only slow growth in its export share.

The two industries that dominate this sector, both of which are being studied by sector working parties, are rubber products and plastics processing. In the case of the former, import penetration has more than doubled since 1970 while the export share has risen only slightly. There is nevertheless a substantial favourable trade balance for the industry. Import penetration in plastics products has on the other hand risen almost in line with the growth in the export share.

Table 3 Manufacturing industry: import penetration and export sales ratios 1970-77 [1]

Per cent

Industry group and minimum list heading [2]	Output weight [3]	Ratio a Imports/Home demand 1970	1971	1972	1973	1974	1975	1976	1977	Ratio c Exports/Manufacturers' sales 1970	1971	1972	1973	1974	1975	1976	1977
Order III Food, drink and tobacco																	
211 Grain milling	4	3	3	3	2	2	3	3	2	1	2	1	2	2	1	1	1
212 Bread and flour confectionery	10	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
213 Biscuits	3	1	2	2	2	2	2	2	2	7	8	7	8	10	10	13	14
214 Bacon curing, meat and fish products	7	44	43	46	49	46	40	40	41	6	6	9	12	11	12	13	15
215 Milk and milk products [4]	6	20	20	21	17	24	27	22	18	2	2	3	4	4	4	6	5
216 Sugar	2	34	34	34	36	48	52	40	41	5	6	8	11	13	16	10	7
217 Cocoa, chocolate and sugar confectionery	5	9	8	8	10	13	11	12	15	12	12	11	12	14	14	16	19
218 Fruit and vegetable products	5	29	26	26	32	32	25	28	31	5	5	5	6	6	6	7	8
219 Animal and poultry foods	4	7	6	7	8	6	5	5	6	1	2	2	1	2	2	2	2
221 Vegetable and animal oils and fats [4]	1	43	43	37	40	36	32	31	33	4	4	5	5	5	5	6	7
229 Food industries not elsewhere specified	4	31	28	24	30	29	26	30	35	8	9	7	10	11	10	9	12
231 Brewing and malting	16	2	2	2	4	3	2	2	2	1	1	1	2	2	2	2	2
232 Soft drinks	3	7	9	9	10	10	7	8	10	2	3	3	3	3	3	4	4
Total (excluding MLH 239 and 240)	71	20	20	20	23	23	22	20	21	4	4	4	6	6	6	7	7
Order IV Coal and petroleum products																	
261 Coke ovens and manufactured fuel [4]	1	—	2	3	2	1	1	—	1	3	3	2	3	10	9	6	5
262 Mineral oil refining [4]	5	22	18	17	21	17	16	17	16	14	13	12	16	14	13	15	14
263 Lubricating oils and greases	1	13	9	9	9	14	11	14	11	24	20	18	19	24	24	25	24
Total	7	17	15	14	17	16	14	15	14	13	12	11	14	14	13	14	13
Order V Chemicals and allied industries [7]																	
271 General chemicals	19	27	27	28	30	37	33	33	36	28	31	31	33	40	37	39	43
272 Pharmaceutical chemicals and preparations	9	12	13	13	16	20	17	19	19	30	35	34	35	39	39	37	37
273 Toilet preparations	2	4	4	4	6	8	7	8	10	14	12	12	13	15	15	19	24
274 Paint	4	3	3	3	4	4	4	5	5	11	10	9	10	13	13	15	17

Table 3 *(continued)*

Per cent

Industry group and minimum list heading [2]	Output weight [3]	Ratio a: Imports/Home demand								Ratio c: Exports/Manufacturers' sales							
		1970	1971	1972	1973	1974	1975	1976	1977	1970	1971	1972	1973	1974	1975	1976	1977
275 Soap and detergents	2	4	4	5	5	7	5	6	7	13	12	12	14	19	19	23	25
276 Synthetic resins and plastics materials and synthetic rubber	9	25	26	27	28	34	29	34	36	28	31	31	30	33	34	35	37
277 Dyestuffs and pigments	3	24	27	26	32	36	29	33	36	38	42	43	48	59	53	55	57
278 Fertilisers	3	13	13	14	15	18	15	15	14	3	2	3	7	15	15	13	12
279 Other chemical industries	7	12	13	15	16	20	17	20	22	29	30	31	30	34	33	33	36
Total	58	18	19	19	22	27	23	25	27	25	27	27	28	34	32	34	37
Order VI Metal manufacture																	
311 Iron and steel (general) [5]	34	9	10	11	11	16	15	17	17	14	19	16	14	13	14	14	17
312 Steel tubes [5]		9	14	13	21	29	34	25	21	21	27	23	24	22	27	29	26
313 Iron castings, etc [5]	9	1	2	2	3	3	3	4	3	3	3	3	3	4	6	6	6
321 Aluminium and aluminium alloys [4]	5	21	24	22	20	22	18	22	23	8	8	7	8	11	12	12	16
322 Copper, brass and other copper alloys	6	38	31	33	38	39	37	39	41	21	17	15	21	21	22	21	27
323 Other base metals [4]	3	52	55	45	53	57	53	57	59	42	44	39	46	46	41	45	45
Total	57	19	19	18	20	24	22	23	23	16	18	16	16	17	17	17	19
Order VII Mechanical engineering																	
331 Agricultural machinery (except tractors)	2	28	21	28	34	41	41	44	44	42	36	40	40	43	46	44	49
332 Metal working machine tools	7	28	28	34	35	42	42	45	45	36	43	44	40	46	50	50	52
333 Pumps, valves and compressors	8	17	22	20	23	23	27	30	30	32	35	39	37	39	45	46	45
334 Industrial engines [6]	3	15	14	20	23	26	26	21	21	46	48	51	53	52	52	47	46
335 Textile machinery and accessories	4	48	51	53	57	64	62	73	57	69	74	76	72	79	81	87	72
336 Construction and earth-moving equipment	5	40	37	31	37	49	59	58	62	62	66	58	56	69	81	78	83
337 Mechanical handling equipment	6	12	14	16	17	22	22	23	24	27	33	27	26	32	36	39	40
338 Office machinery	4	51	51	52	66	69	69	84	91	49	58	56	64	70	71	82	91
339 Other machinery	22	21	22	29	32	34	32	33	33	34	37	40	37	42	45	46	44
341 Industrial plant and steelwork [4 6]	13	4	6	7	7	8	10	10	9	16	19	22	18	18	23	28	32
349 Other mechanical engineering	18	8	9	11	14	16	16	17	18	16	21	25	27	27	27	27	26
Total (excluding MLH 341.3 and 342)	92	19	20	22	26	28	27	29	30	33	37	38	36	40	43	45	45
Order VIII Instrument engineering																	
351 Photographic and document copying equipment	1	54	82	90	94	94	102	114	121	70	91	94	95	94	102	112	120
352 Watches and clocks	1	58	68	66	71	71	69	72	76	41	51	47	48	54	52	50	57
353 Surgical instruments and appliances	2	24	27	29	35	40	40	43	48	32	37	39	43	48	49	47	54
354 Scientific and industrial instruments and systems	10	29	29	29	34	38	40	42	39	37	38	37	40	43	46	48	46
Total	15	34	37	39	46	50	51	53	53	42	46	46	50	52	54	55	56
Order IX Electrical engineering																	
361 Electrical machinery	13	10	12	15	18	22	19	20	21	24	29	31	32	32	39	41	43
362 Insulated wires and cables	5	2	3	4	4	4	5	6	6	16	17	15	15	20	26	27	29
363 Telegraph and telephone apparatus	6	5	4	5	6	8	9	14	10	15	16	14	13	14	14	22	24
364 Radio and electronic components	10	30	30	34	41	43	43	50	52	28	29	30	33	36	42	49	50
365 Broadcast receiving and sound reproducing equipment	6	15	19	25	35	33	32	37	45	9	8	7	8	12	20	25	29
366 Electronic computers	3	51	58	61	66	74	74	78	82	41	51	57	61	68	71	72	77
367 Radio, radar and electronic capital goods	8	15	17	17	20	22	23	23	23	27	30	27	28	33	41	41	44
368 Domestic electrical appliances	5	13	13	16	24	27	24	27	30	21	19	18	18	23	20	23	26
369 Other electrical goods	11	11	11	12	15	18	18	19	24	20	19	19	21	25	27	26	29
Total	67	18	18	21	27	29	28	32	35	23	24	24	25	29	34	37	40
Order X Shipbuilding and marine engineering																	
370 Shipbuilding and marine engineering [4 10]	16	43	50	55	55	57	59	42	51	29	28	30	26	25	40	34	37
Order XI Vehicles																	
380 Wheeled tractor manufacturing	3	36	29	33	42	37	46	43	44	81	77	78	81	75	80	77	75
381 Motor vehicle manufacturing [4]	45	8	12	16	20	19	24	28	33	30	33	27	30	33	39	39	40
382 Motorcycle, tricycle and pedal cycle manufacturing	1	38	44	69	68	73	71	72	76	76	74	85	81	74	67	59	66
383 Aerospace equipment manufacturing [4 11]	20	20	27	28	37	37	33	35	39	29	34	40	47	50	46	45	46
384, 385 Railway vehicles and equipment	3	3	3	3	4	9	7	8	13	15	17	27	18	24	16	18	22
Total	72	12	16	19	24	25	28	31	36	33	36	34	37	40	45	44	45
Order XII Metal goods n.e.s.																	
390 Engineers' small tools and gauges	7	12	12	13	15	15	15	17	18	13	16	17	19	19	20	21	24
391 Hand tools and implements	1	21	22	25	29	34	38	38	45	39	38	37	37	48	58	52	58
392 Cutlery and tableware	1	24	23	24	28	33	33	36	36	48	46	41	40	45	46	48	49
393 Bolts, nuts, screws, rivets, etc	4	7	8	7	9	12	14	15	16	12	13	11	12	14	13	17	17
394 Wire and wire manufactures	4	3	3	3	5	7	6	6	8	12	13	11	12	14	15	15	17
395 Cans and metal boxes	2	1	1	1	1	2	—	—	1	7	5	4	4	5	3	3	7
399 Metal industries n.e.s.[4] (not elsewhere specified)	27	5	6	7	9	9	10	12	11	10	11	10	12	12	13	15	15
Total (excluding MLH 396)	46	6	6	7	10	10	10	11	12	12	13	12	13	14	15	16	18
Order XIII Textiles																	
411 Production of man-made fibres [12]	7	20	25	26	28	36	31	33	38	37	38	40	41	48	43	44	48
412 Spinning and doubling on the cotton and flax systems	6	16	16	19	24	26	26	31	32	7	7	8	10	13	14	15	16
413 Weaving of cotton, linen and man-made fibres	4	38	44	50	52	58	59	63	66	30	31	34	35	41	41	46	50

Table 3 *(continued)*

Per cent

Industry group and minimum list heading [2]	Output weight [3]	Ratio a: Imports/Home demand								Ratio c: Exports/Manufacturers' sales							
		1970	1971	1972	1973	1974	1975	1976	1977	1970	1971	1972	1973	1974	1975	1976	1977
414 Woollen and worsted [12]	9	8	9	10	12	13	16	20	19	28	27	26	28	31	33	35	36
415 Jute	1	30	22	25	20	23	15	11	13	8	7	8	7	9	9	11	12
416 Rope, twine and net	—	11	11	12	13	22	15	19	27	18	17	18	16	19	17	19	21
417 Hosiery and other knitted goods [12]	9	9	12	13	14	14	18	21	21	13	16	15	15	15	16	18	20
418 Lace	—	21	23	31	37	33	42	55	49	20	20	20	23	25	30	39	31
419 Carpets	4	9	8	10	12	12	12	15	18	17	16	17	21	25	21	27	31
421 Narrow fabrics	1	6	6	7	7	10	10	14	15	11	9	9	8	10	12	22	24
422 Made-up textiles	2	14	17	17	17	19	19	21	20	13	11	9	9	12	12	16	18
429 Other textile industries [4]	3	9	10	11	16	17	14	17	17	18	21	20	25	27	26	23	23
Total (excluding MLH 423)	45	14	17	19	21	24	25	28	30	20	20	21	23	26	25	28	30
Order XIV Leather, leather goods and fur																	
431 Leather (tanning and dressing) and fellmongery	2	20	23	24	26	24	24	27	30	27	27	27	26	32	28	30	29
432 Leather goods	1	14	15	17	21	26	27	32	35	18	18	16	15	18	17	18	21
Total (excluding MLH 433)	3	19	21	22	25	25	25	28	32	25	25	24	23	28	25	27	27
Order XV Clothing and footwear																	
441 Weatherproof outerwear	1	13	16	20	27	22	21	16	23	9	9	8	9	8	7	5	8
442 Men's and boys' tailored outerwear	5	8	10	13	20	22	25	29	28	4	4	6	7	9	9	15	17
443 Women's and girls' tailored outer wear	3	8	10	10	13	13	16	22	23	15	14	13	12	14	13	21	25
444 Overalls, shirts, underwear, etc [12]	2	22	27	28	31	37	36	40	37	9	9	10	12	15	15	18	24
445 Dresses, lingerie, infants' wear, etc	5	7	8	10	12	13	13	17	15	10	8	9	9	9	10	15	18
446 Hats, caps and millinery	—	12	13	12	13	17	21	30	28	19	19	20	20	26	35	36	37
449 Dress industries n.e.s.	2	22	18	16	21	24	22	26	27	12	9	7	8	20	10	12	15
450 Footwear	6	14	17	18	20	24	24	28	30	12	12	10	10	12	12	14	17
Total	24	12	14	15	19	21	22	26	26	10	9	9	9	11	11	15	19
Order XVI Bricks, pottery, glass, cement, etc																	
461 Bricks, fireclay and refractory goods	5	4	4	4	4	5	6	4	4	7	9	8	10	14	15	13	15
462 Pottery	3	10	9	10	12	14	12	13	13	36	35	31	34	37	36	36	37
463 Glass	7	13	13	14	17	24	17	17	20	21	20	18	21	21	19	21	22
464 Cement	2	1	1	1	1	2	1	1	1	5	3	3	5	5	5	5	8
469 Abrasives and building materials, etc, n.e.s.	10	3	3	3	4	4	4	4	5	4	4	3	4	5	5	6	7
Total	27	6	5	5	6	9	7	8	9	10	11	10	9	13	13	13	15
Order XVII Timber, furniture, etc																	
471 Timber	8	42	43	40	44	48	39	43	43	2	2	2	2	3	3	4	5
472 Furniture and upholstery	7	3	3	5	7	7	7	8	9	5	5	5	5	8	8	10	13
473 Bedding, etc	1	1	1	1	1	1	1	1	1	2	2	1	1	2	2	2	3
475 Wooden containers and baskets	1	11	14	12	11	14	9	8	8	2	2	1	1	2	2	1	1
479 Miscellaneous wood and cork manufactures	1	9	9	10	10	12	10	11	12	6	6	5	5	5	5	5	6
Total (excluding MLH 474)	19	26	26	24	29	32	24	28	27	3	3	3	3	5	5	6	8
Order XVIII Paper, printing and publishing																	
481 Paper and board [4]	8	46	47	50	51	56	55	56	55	10	11	12	12	15	14	15	16
482 Packaging products of paper and board, etc	8	1	1	1	1	3	2	2	2	2	1	1	1	2	2	2	2
483 Manufactured stationery	4	2	2	2	3	4	5	4	5	5	5	5	4	6	7	7	9
484 Manufactures of paper and board, n.e.s.	3	3	3	3	3	4	5	6	7	10	11	11	12	13	15	18	19
485 Printing, publishing of newspapers																	
486 and periodicals [13]	19	2	2	3	3	3	3	2	3	7	6	6	6	5	5	5	4
489 Other printing, publishing, bookbinding and engraving, etc	22	7	7	6	6	7	7	7	8	10	11	11	10	10	11	12	15
Total	64	19	18	18	19	23	21	22	22	8	8	8	8	9	9	10	11
Order XIX Other manufacturing industries																	
491 Rubber	13	7	8	9	12	14	13	15	17	20	22	18	23	23	25	28	26
492 Linoleum, plastics floor-covering, leathercloth, etc	2	13	16	17	23	19	16	18	23	15	16	15	25	20	20	22	26
493 Brushes and brooms	1	6	7	8	9	10	10	11	10	11	11	10	11	12	13	16	18
494 Toys and games, children's carriages and sports equipment	3	21	22	21	30	30	25	30	35	40	38	30	32	35	34	37	39
495 Miscellaneous stationers' goods	1	14	17	18	22	25	26	30	33	23	27	25	26	27	31	34	38
496 Plastics products n.e.s.	9	6	6	8	9	11	9	9	10	5	6	6	6	7	7	8	8
499 Miscellaneous manufacturing industries	1	21	22	25	28	31	26	27	27	22	22	21	23	28	20	19	22
Total	31	9	10	11	15	16	14	15	17	17	18	15	17	18	19	20	20
Total manufacturing (excluding industries listed in footnote 1)	714	17	18	19	22	24	22	24	25	18	20	19	20	22	23	24	25

Definitions. Home demand = Manufacturers' sales of principal products *plus* imports *minus* exports. Manufacturers' sales = Estimated sales of principal products for all establishments, excluding where possible work done and sales of waste products.

Notes. [1] For years between the census of production 1968 and the start of the appropriate quarterly business monitors, sales of principal products have been estimated using data from the annual census of production. The calculation of the ratios is inappropriate for some industries. In such cases and where suitable data are not available the industry has been omitted from the table. The industries excluded from the table are: MLH 239 other drink industries, 240 tobacco, 342 ordnance and small arms, 396 jewellery and precious metals, 423 textile finishing, 433 fur, 474 shop and office fitting. Where the ratios for an MLH may be distorted by very high intra-industry sales (more than 20 per cent of manufacturers' sales in 1972) that individual MLH is marked with an asterisk [6]. The proportion of intra-industry sales within the total for an SIC order will be greater than for the individual MLHs, particularly where there are substantial sales from one MLH to another (for example, man-made fibres to other textile industries). [2] A more detailed description of the products covered by each MLH is given in the *Standard Industrial Classification (Revised 1968)*. [3] Weight per 1000 used in the index of industrial production – base year 1970. [4] Imports and exports of certain restricted items are not included. Where this appears to have introduced artificial discontinuities in a series, the ratios have been omitted. [5] For those industries which are not covered, or are only partially covered, by quarterly sales inquiries, 1970-75 sales of principal products have been estimated using the Annual Census of Production. [7] The proportions given for the industries on order V have been derived using trade figures from 'Activity in the chemicals industry', published quarterly in *Trade and Industry*. [8] Ratios for 1974-76 are not comparable with earlier years because of a change in the method of deriving estimates of imports and exports. [9] Excluding MLH 341.3. [10] The figures in Business Monitor M 10 for imports of the products of MLH 370 have been increased to include an estimate of the value of foreign-built ships delivered abroad to UK owners. [11] To improve comparability with the corresponding trade figures, only a part of the work done by MLH 383 has been excluded from the sales of principal products. [12] Ratios for 1975 and 1976, which are based on a more refined allocation of trade headings, are not comparable with those for earlier years. [13] The sales data used to calculate the ratios relate to sales of published matter only. [14] A number of figures in the table differs slightly from the NEDC paper due to recent revision.

Profitable overseas promotion – how it can help your company

Promoting goods overseas is not a top priority with British exporters – that is the finding of commercial officers from UK embassies in Europe. They feel that British companies could increase their exports and profits if more attention was paid to promotion and advertising.
To get the point across, the British Overseas Trade Board organised a conference on profitable overseas promotion on 26 October. Besides speeches from Sir Frederick Catherwood, chairman of BOTB, and Sir Nicholas Henderson, Britain's ambassador in Paris, the conference drew on the experiences of four companies, showing how promotion helped them to increase exports. Below is a report on the conference by John Cole-Morgan, of BOTB.

Promotion is often considered peripheral to the main activity of exporting – necessary but not meriting much high level attention, Sir Frederick Catherwood, chairman of the British Overseas Trade Board, told some 200 delegates at a conference on profitable overseas promotion, organised by the board in London on 26 October. His audience, composed largely of senior management from exporting companies, seemed to belie his words but the statistics given later in the day, comparing Britain's promotion in major European markets with that of other countries, confirmed his assertion. For example, George Clare, international group director for Axel Springer Verlag, the giant German publishing group, told the audience that while advertising expenditure by German firms in the UK media had increased from 1975 to 1977 by 114 per cent, British advertising in the German media declined by about 5 per cent during the same period.

'Your EEC competitors entering the UK market do know how important it is to promote themselves within the UK as well as their products and services', said Mr Clare. He gave an example: 'Three leading German firms spent £874,600 on corporate advertising in the British media in 1977. Expenditure on this type of promotion by two leading British firms in German media the same year – and they were the only ones – was less than £50,000. I am speaking of ICI and Metal Box.'

Sir Nicholas Henderson, Britain's ambassador in Paris, told his audience that despite the fact that press advertising in France by British firms is estimated to be growing at 20 to 25 per cent per year, a French survey of advertising by foreign firms in France showed that British firms are spending about 17 per cent of their total promotional costs on press advertising this year, whereas the Germans are spending 29 per cent.

He said 'The French study suggests that the difference between the British and German firms may be one of the reasons why the Germans are selling so much more than we are. I suggest, therefore, that there should be more advertising in France, particularly in the specialised French journals. The French are very inquisitive about the new British products. Our inventiveness is a talking point. Let us not be shy in putting our products in the shop windows.'

'Some British consumer goods manufacturers have shown how shrewd promotional campaigns can overcome entrenched French opposition' he continued. 'Nobody ever believed that the French would eat chocolate with mint in it but now they do so with much gourmandise'.

The conference, which BOTB organised in association with the Institute of Practitioners in Advertising, drew on the experience of four companies, Stafford Miller Ltd, The Mettoy Company Ltd, Cadbury Schweppes Ltd and JCB Sales Ltd, to demonstrate the part played by promotion of all kinds in exporting. Its aim was to enable those responsible for deciding what level of resources should be devoted to promotion and advertising to benefit from the experience of others.

Stafford Miller Ltd, the British arm of the medium-sized privately owned block drug company of New Jersey, employing about 140 people in its Plymouth factory, showed how using educational style TV and press advertising to launch new effervescent denture cleaner sequentially in different countries had enabled the company to open up markets for a product which many of its potential clients did not realise they needed. Starting in Scandinavia four or five years ago the same campaign had been repeated in Austria, Switzerland, Spain, Greece and Portugal but with very careful attention to the local idiom.

Mettoy's case study featured the promotion of its toy typewriter in France. Mettoy, one of the three or four largest toy manufacturers in the UK with a turnover of £27.5 million and exports of £11.4 million, saw the toy typewriter, made by the industrial firm Byron Jardine, for the first time at an international toy fair, and entered into an agreement to handle its distribution worldwide. The typewriter which is a top of the range model, with upper and lower case, punctuation, shift lock and automatic ribbon reverse, sells in the UK for about £14. It looks like a real portable typewriter except that it is scaled down to suit the hands of a six-year old and the major target market is girls between the ages of five and nine. It has been a tremendous success throughout the world, particularly in America and France. The case study showed how in France the major turning point came when three years ago toy advertising was allowed on French television for the first time.

In the first year Mettoy edited a UK commercial from 30 seconds to 15 seconds and ran it in France with limited success. A commercial produced specifically for the French market in 1977 was much more successful and this year despite increased production 30 per cent more typewriters could have been sold in France than were available and sales are three times the 1975 figure.

The Cadbury Schweppes case study focused on finger biscuits which are the backbone of its exports to France. When in 1967 import quotas on confectionery products vanished, Cadbury's chocolate finger biscuits were chosen for a trial. The case showed how, to start the ball rolling, slightly suggestive advertisements were placed in national magazines like *Paris Match* aimed at the big buyers in order to get listings in the wholesale catalogues and to claim national advertising. When commercial TV arrived in France, the slightly risque style of advertising was continued and sales rocketed.

Unlike the other three cases media advertising was not the prime tool in the aggressive and highly organised promotion of JCB, the family-owned British excavator and loader manufacturer, whose sales are expected to top £100 million this year.

The audience were told how JCB create a powerful and consistent corporate image with brochures, sales aids, audio-visual packages and merchandise like anoraks and toys, all part numbered and available to dealers on a self-financing basis. The most impressive part of JCB's promotional activity, as far as the final customer is concerned, are the visits to the factory in Rocester, Staffordshire. The case study showed how, in groups of three to 180, JCB receives over 6000 visitors a year to its headquarters and production plant, one of the largest and most modern earth-moving equipment factories in Europe. A typical visit by an American group might involve two days in London, a river trip, veteran buses to St Pancras, special train to Stafford, visits to country pubs and an elaborate choreographed demonstration of the machines with the Grenadier Guards band.

Together the four cases showed that there was no one right way to promote overseas sales and that media advertising, though the most apparent part of the marketing mix, was not the only way, and that it was only effective when a great many other factors in the marketing mix were right. The common factor in the four cases was the commitment of senior management time, and a high level of resources to promotional activities.

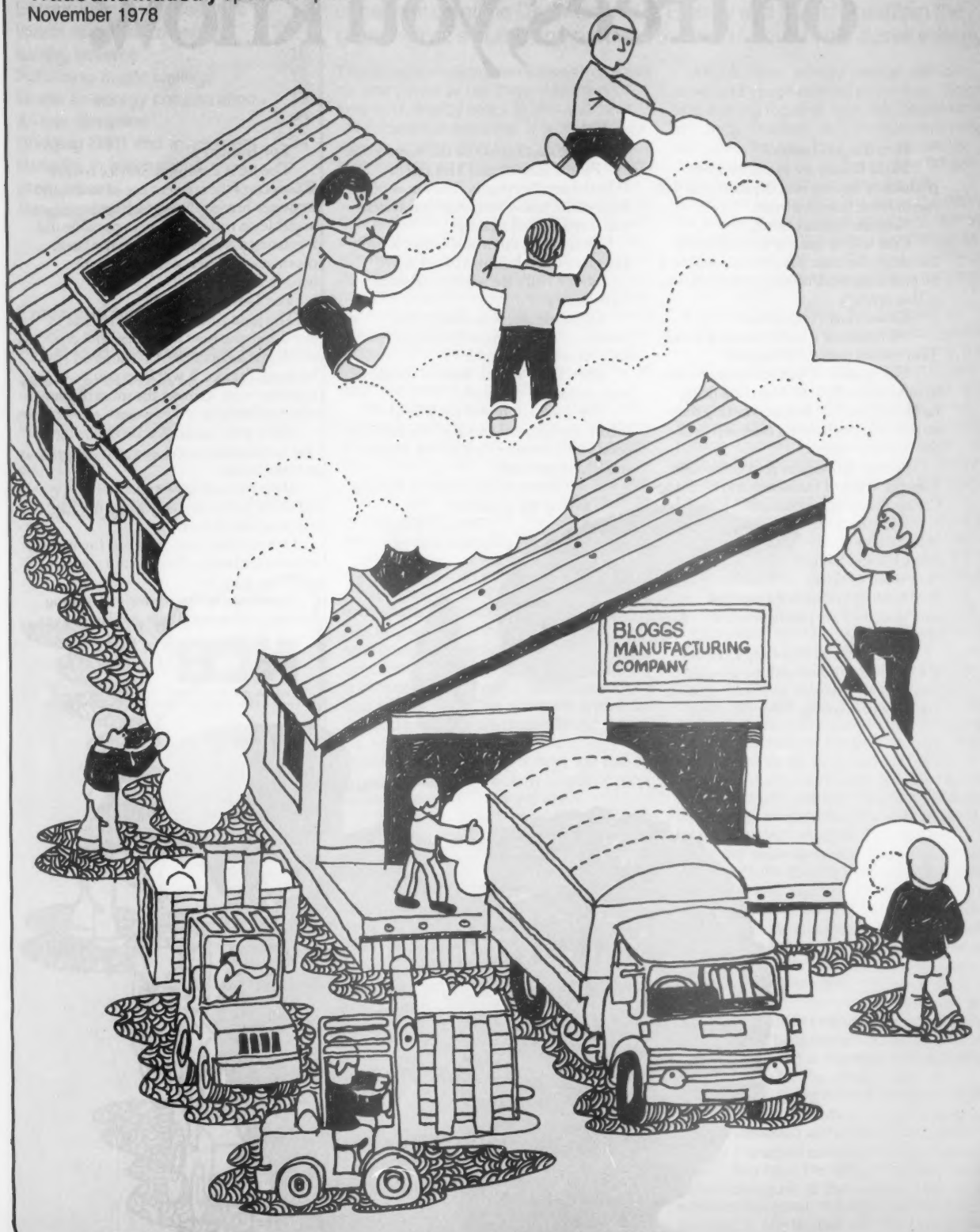
Have you a good export picture?

Each week *Trade and Industry* publishes pictures illustrating Britain's export business. Companies with export successes are invited to send in the story with a photograph showing the goods in manufacture, ready for despatch, or, preferably, on arrival overseas. The story must, of course, reach us while it is still news.

Send your export photographs to the Editor, *Trade and Industry*, Room 439, 1 Victoria Street, London SW1H 0ET.

Energy conservation
the risk-free investment

Trade and Industry special report
November 1978



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First the good news.

We in Britain are in the enviable position of having coal deposits that will run to three hundred years.

Now the serious news.

Coal will be our main fossil fuel of the future, because gas and oil could well be past their peak before, or near, the end of this century.

So we mustn't squander our coal.

We must use it well, and use it wisely. That means using it efficiently.

The trouble is that too many people in industry and in the home are using fuel inefficiently. They are wasting their money and not helping themselves or the country one bit.

But the message is getting through. Take the Waldorf Stationery and Greetings Cards company, for example.

With the help of NCB Technical Service, they changed their worn out coal-fired heating system for a modern one. Now they are paying less for better heating.

The Northern Spinning Division of Courtaulds did something similar, also with NCB advice, and came up with a new plant boasting 78% efficiency.

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People like Mr and Mrs Hill of Whittlebury, Northants. They now heat their entire home from just one system – coal-fired central heating.

This keeps the whole house warm and gives them lashings of hot water.

So the Hill's are getting real value for their money.

Of course, these are only a few examples of the companies and people who have seen the light.

But it's an example that we should all try to follow. And quickly.

Use coal wisely and you'll help secure the future. If you don't do it for the good of the country, do it for the money you'll save yourself.

OK, but what are the NCB doing to help the situation?

They are doing a great deal to help.

For Industry.

The NCB Technical Service covers all aspects of the efficient use of steam and hot water heating. Expert advice is available on making the best possible use of existing systems, as well as the latest information on new equipment and techniques.

For Domestic Use.

The joint partnership of the Coal Board, independent producers and coal merchants form the SFAS – the Solid Fuel Advisory Service. It will help you in countless ways to make the most of your solid fuel heating.

SFAS will: Advise you on choosing your new real fire – and give you guidance on installation.

Help you select the right fuel – and show you how easily a real fire can heat your whole home.

Demonstrate how your real fire can be controlled to give the warmth you want when you want it.

Show how to make your coal heating even more economical with good insulation.

NCB

For details of NCB Technical Service or Solid Fuel Advisory Service write to Hobart House, Grosvenor Place, London SW1X 7AE.

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The risk-free investment

Dr John Cunningham and Les Huckfield, ministers responible for energy conservation at the Departments of Energy and Industry explain the government's policy and purpose behind its drive to conserve energy.

Energy conservation now ranks with coal and nuclear power as the three mainstays of long-term energy policy in this and most other industrial countries. It is, in fact, now seen as an alternative form of supply in what is likely to be an increasingly energy-hungry world.

Energy conservation is not merely possible on a substantial scale in most firms, it is also one of the most risk-free investments that can be made. Investment in time, effort and money to save energy will not merely repay itself handsomely now but will bring continuing and increasing benefits as energy prices rise – and they are expected to double in real terms by the end of the century as world production of oil and natural gas reaches its peak and begins to tail off.

The United Kingdom will shortly be self-sufficient in energy and we may in the short-term even become net exporters of energy. The efficiency with which we use our resources will determine how long this position can last. It certainly won't be indefinite, and we should take this opportunity to prepare ourselves now for the future.

First, however, it is desirable to define what we mean – and do not mean – by energy conservation. The nation's objective is to achieve the maximum cost-effective savings in all sectors of the economy; it is not to save energy at any cost, though that might be our concern in a particularly acute crisis. Nor is it the objective of policy necessarily to use less energy, given that economic growth and demand for energy are closely linked. A growing economy will require more energy. Our objective therefore is to reduce the rate of growth in demand for energy by getting more value out of the energy we use.

In straightforward industrial terms it means reducing the energy input per unit of output energy efficiently, economically and cutting out waste.

It may be argued that this is no more – and no less – than might be expected of competent managements at all times. In an ideal world that might be true. But managements have a lot of things on their minds and inevitably have priorities. Energy use understandably attracted little attention when it was cheap, except in those industries where energy represents a substantial proportion of total costs.

In the average company energy accounts for less than 5 per cent of total costs and even now its costs may not be taken very seriously in spite of the five-fold increase in the price of oil in 1973/74. Yet if the country is to achieve worthwhile savings we need a contribution from each and every consumer and nowhere do we need a greater effort than in industry and commerce which account for well over 40 per cent of total energy consumption.

What is more, energy savings can be achieved through existing technology. Scientists working together from the Departments of Energy, Industry, and Environment have estimated that industrial and commercial consumption could be reduced by 30 per cent if existing techniques were fully developed and applied. We may not achieve the whole of this technological potential but there is no doubt that a very substantial opportunity confronts industry and commerce to reduce one increasingly important element of total costs.

Government policies are designed to secure as much of that potential as possible on a basis of cost-effectiveness and to put ourselves in a position as a nation to take advantage of measures which become cost effective as energy prices rise. So far we have had little recourse to the law – to compulsion. Our aim is to secure a voluntary response to a mixture of information, advice, the demonstration of the technological potential and investment incentives.

One example of the way firms respond to such incentives is our new energy conservation scheme, introduced under section 8 of the Industry Act, which seeks to encourage management to undertake investment in replacing inefficient boilers and in improving the insulation of poorly insulated buildings by offering grants towards the costs of such projects. Since the scheme was launched in June the response by industry and commerce has been very encouraging. To date some 500 applications have been received for grant assistance towards the cost of the initial consultancy work and 150 offers of assistance have been made. If those 150 projects eventually qualify for capital grant assistance under the scheme they will represent a total investment of some £12 million.

We are seeking to accelerate the adjustment which the country must make to a world of scarcer and much dearer energy before the difficulties hit us. It is necessary that we start now for the adjustment cannot be made overnight or even within the space of a year. We need to work at it steadily, and with increasing commitment.

We hope that more managements will recognise where their interest lies and put themselves in the best position to do an effective job by appointing a manager with specific responsibility for the efficient use of energy – and giving him full support in carrying out the fundamental audit and analysis of energy utilisation within the organisation. Energy managers can only achieve real success if they have the support of their managerial colleagues at the highest level, and if workers thoughout the organisation are involved in, and familiar with, the energy conservation programme.

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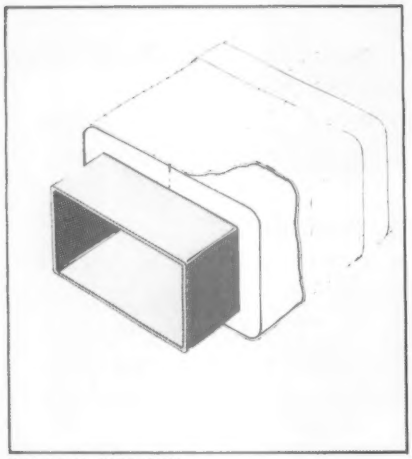

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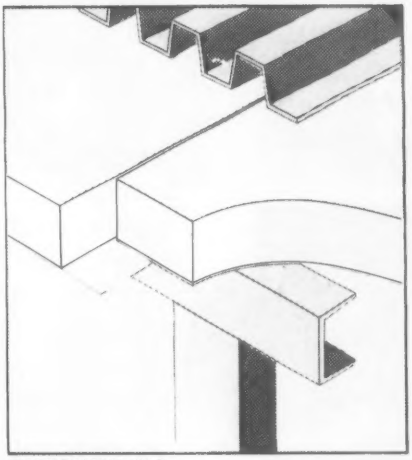

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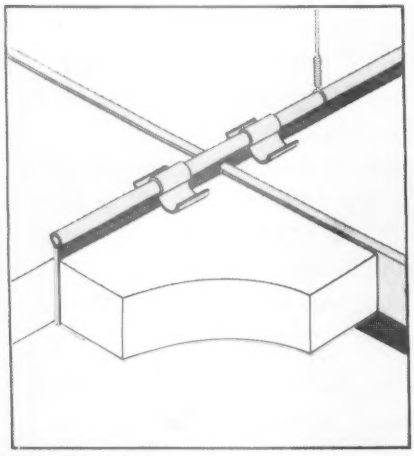

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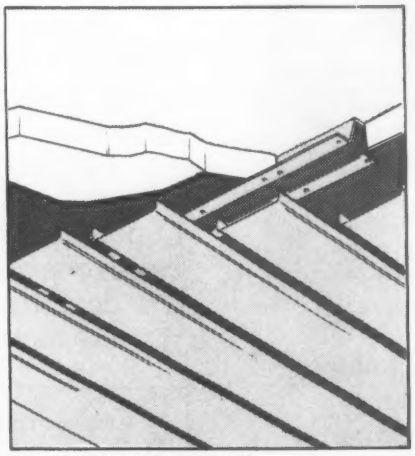

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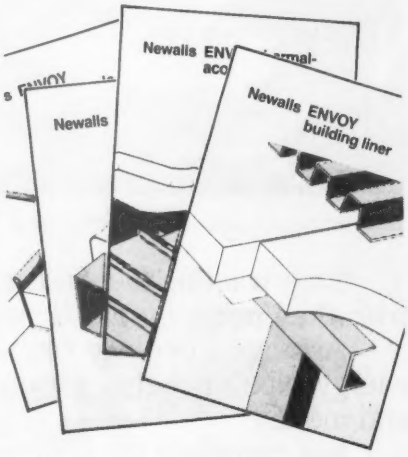

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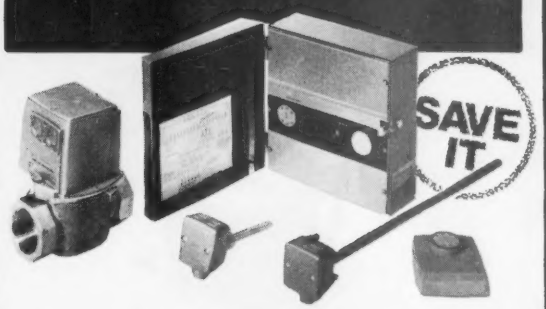

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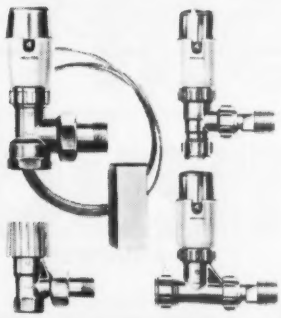

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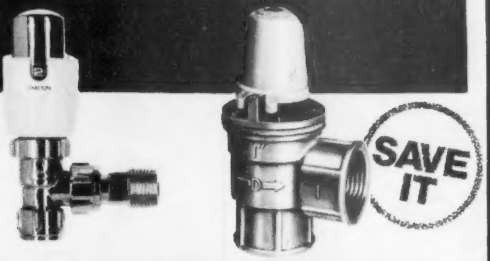

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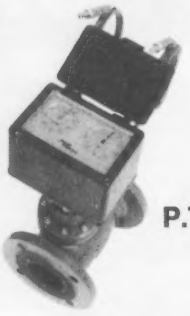

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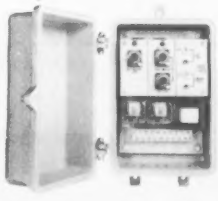

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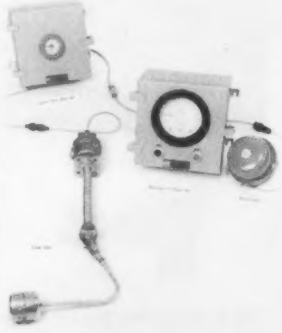

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Potential realised

Sufficient time has elapsed since the events of five years ago which elevated the importance of energy conservation – or fuel efficiency as it used to be called – to permit a reasonable examination of progress and achievements. Throughout industry and commerce there has been an increasing realisation of the potential savings to be gained from energy conservation. Government measures have provided the spur, as described by Bernard Ingham who heads the energy conservation division at the Department of Energy.

It is now just over five years since the oil embargo, followed by a five-fold increase in the price of oil, focused renewed attention in the United Kingdom and elsewhere on the use as well as the supply of energy. Over this period the very considerable public interest in energy as a subject has not merely been maintained but intensified. This is, no doubt, partly because of the outstanding North Sea oil and gas achievements; our deep interest as a nation in coal mining; the controversial nature of nuclear power; the remarkable interest in the benign and renewable sources of energy – wind, wave, tidal, solar and geothermal – which bears little relation to their likely contribution to energy supplies this century; and not least the high price which consumers feel they are paying now for fuel and power.

Energy has in fact become a romantic subject. It is, however, a moot point whether energy conservation is viewed in quite the same light. Saving energy does not require technological frontiers to be rolled forward. On the contrary, major savings can be achieved by applying existing technology. It does not require fortitude in remote and dangerous places or feats of engineering. Instead, it requires the painstaking application of commonsense and generally well tried remedies. It does not in the end produce mammoth and sophisticated pieces of hardware or plant; instead, it works through largely hidden or unobtrusive equipment. It does not take people to the ends of the earth in pursuit of new resources or new business (unless you are selling energy conservation equipment); instead, it requires the down-to-earth exploration of the potential within a company's own works and a sustained effort to realise and maintain that potential.

Energy conservation cannot therefore be described as glamorous. It is essentially of this workaday world. It is in the thousands of different circumstances in which energy is used that the real savings which the needs of the nation – and the world – are to be obtained. There is, of course, one important advantage – energy conservation saves money and resources and is reflected in the balance sheet. What is more, it is largely risk free. The return is assured, is frequently rapid and is continuing. Over the last five years the potential of energy conservation for the individual enterprise has been increasingly realised probably because of the steep increase in the price of energy to industry at a time of generally severe problems for management; a vigorous campaign to promote a greater awareness of the potential of energy conservation, linked with practical advice and information on how to achieve it; and, more latterly, incentives to the firm to save energy.

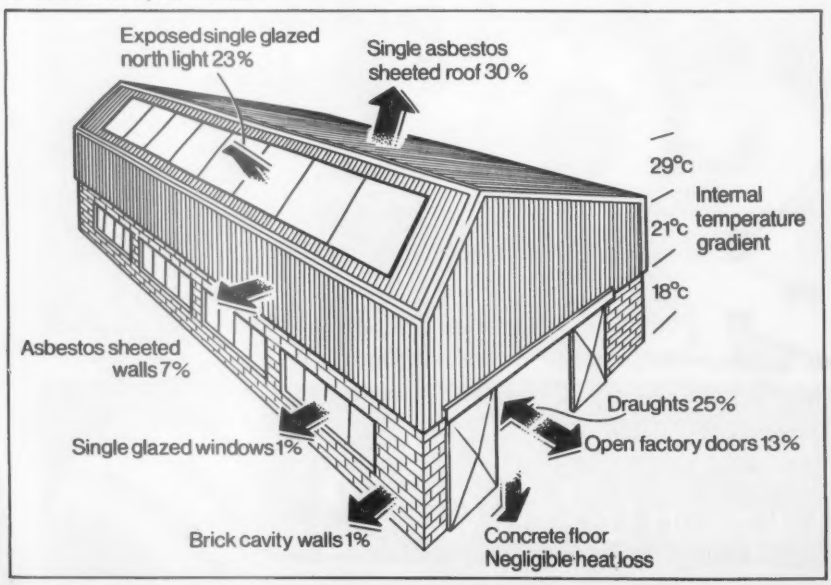
This waste of energy was overcome by Newman Electric Motor's (Manufacturing) Ltd with money provided under a now closed Department of Energy loan scheme. Two of these furnaces were replaced by new Morgan furnaces giving a dramatic improvement in environment and in the control of metal temperatures and quality. The company expects to recover its investment in 2½ years.

A combination of these three factors has resulted in a substantially increased interest within companies in energy efficiency and in arrangements designed to get results. The evidence for this is the continuing high level of interest in future energy price movements and the pattern of supply; the considerable take up of advisory and promotional material available from the government; and the development of energy management as a subject of specific managerial responsibility. The mushroom growth over the last 12 months in the number of energy manager groups – there are now 52 in the UK – is a movement which appears to be unique among industrial countries. The circulation of 'Energy Management', a monthly newspaper produced by the Department of Energy for the energy manager, has trebled and there have been 'sell out' attendances at the national energy management conferences organised by the Department of Energy.

Recent evidence is the massive interest in the Department of Industry's energy conservation scheme, launched in June under section 8 of the Industry Act 1972 to provide selective incentives for energy conservation investment, linked with the use being made of the Department of Energy's schemes providing quick freefone advice and subsidies for surveys by independent consultants on an establishment's energy saving potential.

Further government initiatives are designed not merely to sustain this greater interest but to convert it into energy- and cost-saving action. For example, the government has set aside £19 million over a period of four years for additional information and advisory services to industry and commerce. A major task under this heading will be to feed back into sectors of industry the information obtained and good practice identified by the industrial energy thrift scheme, which has so far involved visits on behalf of the Department of Industry to 2200 firms, and

The major sources of heat loss through the fabric of a typical industrial building with a floor area of around 7500 square metres.



the energy audit scheme which has examined in depth the energy usage in a substantial number of energy intensive industries. Here the aim is to target information and advice to specific industries and to involve them directly in the examination of the thrift and audit results.

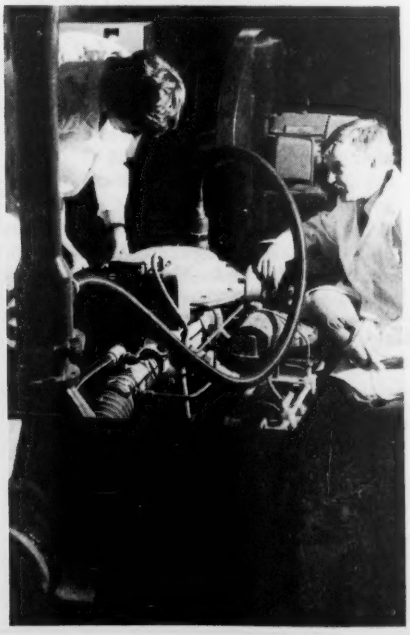
Second, the government has provided some £20 million over four years for demonstration projects in industry, commerce and agriculture designed to convince firms of the benefit of existing technology applied in novel circumstances or adaptations or developments of existing technology.

These sums, and the £25 million available over two years under the energy conservation scheme, are part of a package of government measures costing some £450 million over the first four years of a 10-year programme. This package has been introduced over the last 12 months and has earned Britain a good reputation abroad for its energy conservation effort.

Our main task at present is to launch this programme effectively. It is designed to save 11 million tonnes of oil equivalent (mtoe) after 10 years. At present a combination of higher prices and a vigorous information and advice campaign is thought to be saving 6 per cent a year, worth 12.5 million tonnes of oil equivalent. If we do no more than maintain this success and get the full benefit of the 10-year programme we could be saving well over 23 million tonnes of oil equivalent in 1988 which would otherwise have been consumed. In present day prices that would be worth £1.6 billion. Put another way, it would be roughly equivalent to storing up the entire annual output of the Forties oilfield for a rainy day.

However, the projections in the green paper on energy policy attribute a reduction in demand of 60 mtoe in the year 2000 to energy conservation. Thus, while a good start has been made, there is a long way to go yet. It will take a lot of hard work and perseverance to realise our national potential for energy saving.

This recuperative burner, designed and developed by British Gas, can achieve fuel savings of 45 per cent and in some cases more.



Voluntary energy conservation policy endorsed at national conference

There was a need to continue the development of a voluntary energy conservation policy, Sir William Hawthorne, chairman of the advisory council on energy conservation, pointed out to the 'National energy management conference' held in Birmingham on 10 and 11 October.

Penal measures might prove necessary in the future but were not yet acceptable, Sir William said. For instance, the police had found lower speed limits difficult to enforce because motorists considered it their right to use petrol which they had paid for, as they saw fit. Public education and wider publicity must for the present continue as the main plank of the UK's energy conservation policy.

The conference, the second organised by the Department of Energy, was attended by some 1000 delegates. Bringing experience from all sections of public and private industry and services, they produced a lively exchange of views on cost-effective energy saving.

Following its opening by Dr John Cunningham, day one of the conference was devoted to a series of talks aimed at top management. This session, chaired by Lord Robens, spanned the general energy situation and the role top management and a properly supported energy manager could play in alleviating the problems of scarce and expensive energy.

Sir David Steel, chairman of British Petroleum, spoke of the practices of the oil companies themselves and BP in particular. BP predicted that oil demand in the non communist world would have doubled by 1995, even allowing for a 20 per cent saving from conservation, and supply would fall short of demand by 1990. The importing countries could thus expect significant price increases and balance of payment problems by the mid-1980s. Britain should not take a complacent attitude because of its North Sea reserves. These were limited and its position as a net exporter would be short lived. Thus action must be taken now to cope with the country's energy needs after the year 2000. The long lead time, for example, for power station construction made this especially necessary.

Sir David said that his company expected to achieve a target of 15 per cent savings over 1973 consumption levels as early as 1979-80. Two major lessons could be learned from BP's success. First, energy conservation would not develop momentum unless the initiative and authority behind an energy manager came from the main company board. In BP a senior management committee reported to the board on the energy saving activities of subsidiary companies. Secondly, subsidiary companies had to be persuaded to take energy saving action on their own initiative, since it was at this level that conservation measures could be put in hand quickly and effectively.

BP's conclusions were endorsed by Mr J. R. S. Morris, deputy chairman of the National Enterprise Board and a former director of Courtaulds with responsibility for energy conservation. In Courtauld's the company's main board gave the full weight of its authority to a target of achieving a 10 per cent saving on an annual energy bill in excess of £50 million. A secretariat was set up to collect information on a site and factory basis and to organise monthly monitoring. Energy co-ordinators were appointed at director level, but with sufficient site experience and technical knowledge to be acceptable to local management. One-day of half-day visits were made to each site, examining all processes and plants and making recommendations for immediate action on 'good housekeeping' and other measures. Ample opportunities for improvements with two or three year payback periods were discovered. As a result Courtaulds had achieved savings of 12½ per cent since 1975 and it is hoped to achieve further savings of 6 per cent in 1978.

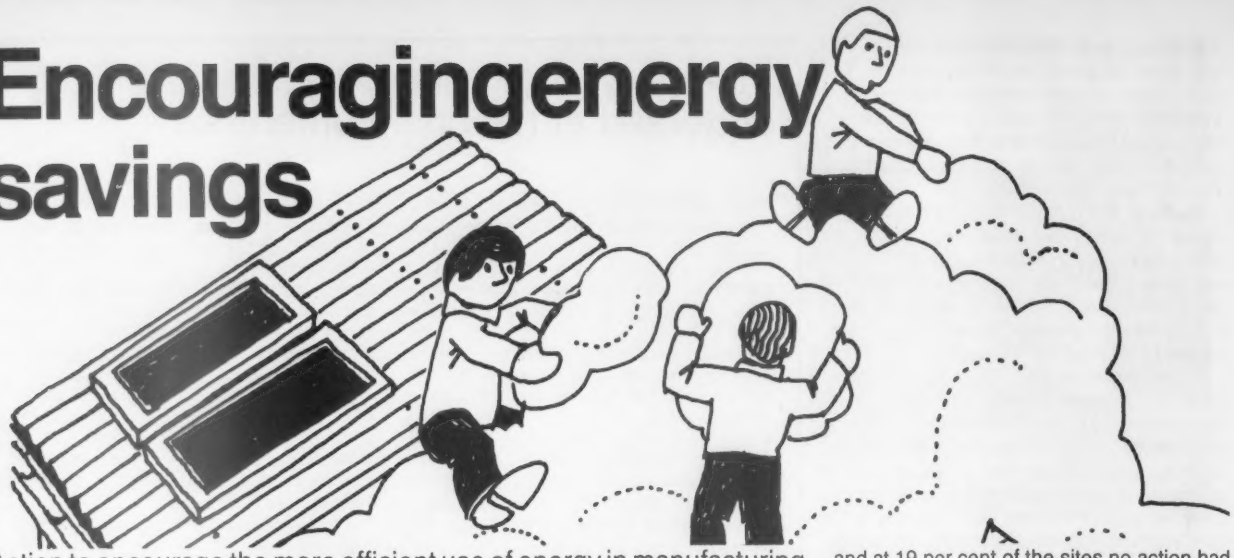
The motivation of employees was a natural progression and Mr A. H. Kay of Alcan Booth Ltd a member of ACEC explored this area in depth. Alcan had introduced a bonus scheme as a means of encouraging employees, who did not have to foot the energy bill, to make a contribution to energy saving. The scheme had given employees an energy consciousness and Alcan were optimistic of the success of the scheme on a short term basis.

The final speaker on the first day, Mr P. H. Bond, a member of the Royal Institute of British Architects, stressed the need to monitor energy use in building. He explained his formula for doing so and pointed out that electric instrumentation could be installed quite cheaply in many buildings to provide the necessary information. He was particularly concerned to reduce the rate of air exchange, advocating a greater use of heat pumps and heat recovery systems as well as wall and loft insulation up to 400 mm thick. Mr Bond was a controversial speaker and provoked a lively response from other architects at the conference.

The second day of the conference was devoted to technical presentations and covered comprehensively the case for investment in energy saving equipment, the assistance and advice available from government, the importance of energy audits as well as the more detailed aspects of conservation in the industrial, commercial and public sectors.

The success of the conference was acclaimed by virtually everyone who attended and inquiries are already being received concerning the 1979 conference. In order to give this a fresh impetus the possibility of an international conference is being considered.

Encouraging energy savings



Action to encourage the more efficient use of energy in manufacturing industry and commerce is being taken by the Department of Industry across a broad front as part of the government's campaign to promote the better use of energy in the UK. Energy conservation is being promoted, says Dr David Everest who is responsible for energy conservation at the department, through the industrial energy thrift scheme, by encouraging investment in energy-saving technology through the energy conservation scheme and by providing financial support for research, development, and demonstration projects.

The industrial energy thrift scheme, which now forms a major part of the department's energy conservation programme, was started in 1976 and has three main objectives. The first is to find out how energy is used in industry and how it could be used more economically and more efficiently. The second is to promote the more efficient use of energy in industry through improvements in process efficiency and the adoption of 'good housekeeping' practices. The third is to find out what action is needed by government to assist industry in using energy more efficiently.

The scheme which is organised and managed by the department's energy unit is based on a campaign of confidential one-day visits to representative companies in the different sectors of industry. The visits are carried out for the department by research associations and independent consultants.

In the first two stages of the scheme, over 2200 visits have been made to selected manufacturing sites in 67 sectors of industry. In the third stage of the scheme which began in August 1978, visits will be made to a further 58 sectors so that almost the whole of manufacturing industry will be covered.

Inquiries made of 938 firms which had taken part in the first two stages of the scheme showed that most of them had taken action to make better use of energy following the thrift scheme visit. Some of the firms supplied quantitative information and 25 per cent of the 938 firms are, between them, saving £5½ million per annum at current prices of 9 per cent of their total annual energy bill. At 56 per cent of the sites, action had been taken but the value of the savings was not available, and at 19 per cent of the sites no action had been taken by the time of the inquiry. Although all the savings reported cannot be attributed to the thrift scheme alone, there is no doubt that the visits have been successful in encouraging and helping energy conservation.

The following brief case histories illustrate the ways in which energy and cost savings can be achieved:

- At a company in the textile finishing industry, a heat wheel was fitted to a drying and setting stenter. As a result, a fuel saving equivalent to £4,500 per annum was obtained and the capital investment was recovered in 15 months
- A new flash steam recovery system installed at a paper mill is saving fuel worth £6,000 per annum with the cost of the system being recovered in four months. A further £2,000 per annum is being saved through fitting additional power factor correction equipment and changing to more efficient lighting
- At a pottery company, the roof and walls of an intermittent kiln were insulated with ceramic fibre and the original heating elements up-rated from 100 kW to 150 kW. These modifications led to a trebling of output whilst electricity consumption was halved. The capital investment was recovered in six months.

From the results obtained through the thrift scheme, the potential energy savings which could be obtained through the application of relatively simple measures have been estimated for nine industries (table 1). For manufacturing industry as a whole, the annual savings which could be achieved through the application of short-term measures using existing technology have been estimated to be equivalent to 5½ million tons of oil worth about £370 million. These poten-

Woollen industry seminar

Energy saving in the wool textile industry is the theme of a one day seminar to be held at Wira (formerly Wool Industries Research Association), Leeds, on 29 November. Significant opportunities for energy saving, such as the recovery of waste heat, and the practical experience of firms in the woollen industry, will be among the subjects discussed.

This seminar is being organised by Wira for the Department of Industry. It is one of a series forming part of the department's campaign to encourage the better use of energy in the manufacturing industry. The main objective of the seminar is to show what can be achieved in practice towards the more efficient use of energy. It will also provide an opportunity for the exchange of ideas and information between various levels of management and all those concerned with the use of energy in industry. The findings of the industrial energy thrift scheme, discussed in the recent Department of Industry report 'Energy use in the woollen and worsted industries', will be presented.

Further details of the programme and application forms for the seminar may be obtained from Wira, Headingly Lane, Leeds LS6 1BW.

Table 1 Potential energy saving in industry

Industry	Estimated total energy use in 1975 (TJ/annum)	Potential savings (TJ/annum)	Percentage savings	Total value of potential energy savings at £1.5 per GJ (£m)
Paper and board	77 088	10 115	13.1	15.2
Bricks, fireclay and refractory goods	67 266	4 668	6.9	7.0
Shipbuilding and marine engineering	14 495	4 213	29.1	6.3
Glass	36 888	3 373	9.1	5.1
Electrical machinery	13 488	3 200	23.7	4.8
Textile spinning	19 173	1 918	10.0	2.9
Pottery	17 295	1 730	10.0	2.6
Wire and wire manufactures	8 215	1 313	16.0	2.0
Footwear	1 729	311	18.0	0.5

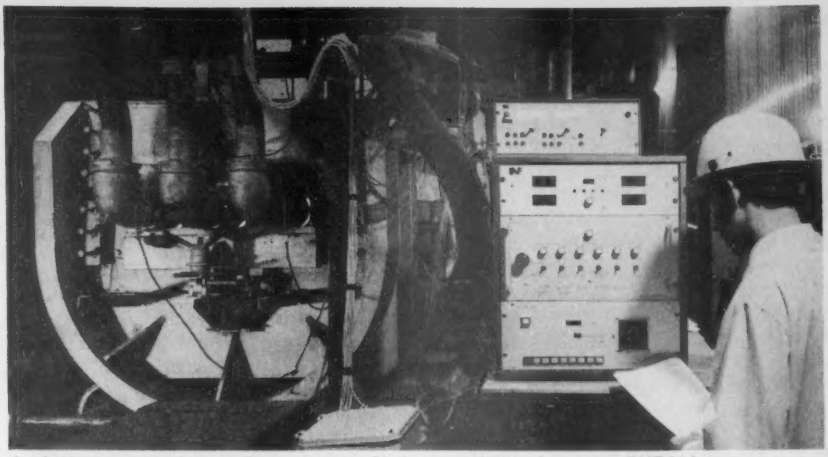
tial savings are greater than the contribution to our energy supplies which could be expected from alternative energy sources in the foreseeable future.

To encourage savings in firms which have not been directly involved in the thrift scheme and to promote energy conservation in industry as a whole, information on energy-saving opportunities and the action which can, or needs, to be taken to improve energy use is being made available to the whole of industry through the publication of reports, the organisation of meetings and seminars, and other forms of publicity.

The first of the thrift scheme reports, 'Energy use in the woollen and worsted industries', which was prepared by Wira for the department, describes the opportunities for improved energy utilisation in these industries, gives details of the estimated potential savings, and concludes that major savings could be achieved through heat recovery and the insulation of buildings. Recommendations on the action needed to improve the efficiency of energy use in the industry include practical studies to determine the feasibility of heat recovery from warm effluents from dyeing and wool scouring processes; a technical and economic assessment of the potential for heat recovery from exhaust air from dryers; and factory trials for dryer control systems and the development of better equipment for the control of drying processes.

The second report in this series, on energy use in the pottery industry, will be published shortly and this will be followed by reports on the other industries covered by the scheme.

More detailed studies of the ways in which energy is used, particularly in energy-intensive industries, have been carried out by the department's energy unit in parallel with complementary work at the energy technology support unit at Harwell for the Department of Energy. The principal objectives have been to identify and quantify the energy used in each of the main steps of a manufacturing process, to assess the potential for energy saving and to identify the research, development and demonstration needed to achieve them. The findings of these more detailed studies are being reported in the energy audit series published jointly by the Departments of Energy and Industry.



A microprocessor unit controlling a 2 tonne Skelnor reverbatory furnace at BNF Ltd.

The department's activities on the promotion of energy conservation in industry are co-ordinated with the related activities of the Department of Energy and other departments through the energy conservation/information, advisory services and promotion committee which includes representatives from the Confederation of British Industry, Trades Union Congress and industry.

Action and investment

To achieve the potential energy and cost savings identified through the thrift scheme, action and investment are needed. Much can be done by adopting 'good housekeeping' measures – adjusting the control of thermostats, better maintenance of boilers, more efficient lighting and so on – but other measures may require the expenditure of capital, for example, the insulation of factory buildings or the replacement of inefficient boilers. Although many companies appreciate the cost savings that can be made through investment in energy-conservation measures, there are other demands on capital and management resources, the savings may be relatively small for a firm in a non-energy intensive industry, and the pay-back times may be relatively long.

The energy conservation scheme which was announced by the Secretary of State for Industry on 13 June (*Trade and Industry*, 16 June, page 603) is designed to encourage and accelerate investment in energy saving through selective financial support.

The scheme which was established under section 8 of the Industry Act 1972 provides 25 per cent grants for the replacement and modernisation of boiler plant; 25 per cent grants for the insulation of premises; capital grants for the replacement or modernisation of combined heat and power systems; and 50 per cent grants for associated consultancy work. The projects proposed must be technically sound, produce a worthwhile improvement in energy use and satisfy specific technical requirements. Since the scheme was announced a large number of applications have been received by the department and a number of grants have now been offered towards the cost of boiler replacement and

Thrift visit benefit

NEI John Thompson Ltd of Ettingshall, Wolverhampton, employs about 1000 in heavy engineering, for the power generation and petrochemical industries. In July 1976, a visit was made, at the company's request, to carry out an energy survey under the industrial energy thrift scheme, by staff of the Production Engineering Research Association (Pera).

By the time of the follow-up visit in July 1978 the company had implemented many of the proposals and were able to quantify some major savings that had been achieved:

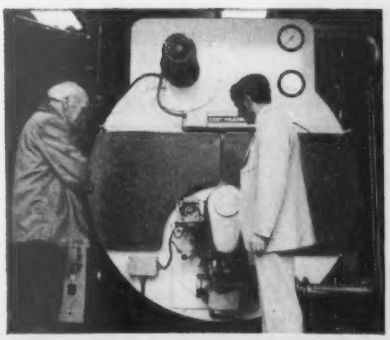
- ☐ Low thermal mass furnace insulation had achieved an annual saving of £12,000 with a payback period of two years
- ☐ Partial decentralisation of boiler services with an annual saving of £7,000
- ☐ Rationalisation of supplementary heating annual saving of £5,000 at virtually zero cost
- ☐ Compressed air losses reduced by 5 per cent with an annual saving of about £5,000
- ☐ Partial replacement of mercury vapour lamps by sodium produced an annual saving of about £3,000.

At the time of the first survey the company had initiated a programme of energy conservation, with an energy manager, and an energy committee under the chairmanship of a director. They had maximised furnace loading and installed power factor correction and were undertaking constant matching of space heating temperature with outside temperature, regular combustion efficiency tests, and effective internal publicity.

Further measures recommended during the initial visit included installation of additional optimum start controllers and thermostats, removal of supplementary space heating devices, better control of ventilation and improved insulation. The benefits of gas instead of electricity for pre-heating were discussed and the installation of sodium lamps was suggested.

Although in the Midlands in 1977 it was overall slightly colder than in 1975, and the numbers employed and the buildings and equipment in use by the company were substantially the same, the total energy consumption had fallen from 1 950 000 therms in 1975 to 1 810 000 therms in 1977, a saving of 7½ per cent, which in money terms at present fuel prices amounts to £37,000.

M. S. Parker (left), energy manager of NEI John Thompson, with Mr. A. Picken of Pera discuss the benefit of decentralising boiler services.



insulation projects.

The department is providing financial support under the Science and Technology Act 1965 for a wide range of energy-saving R&D projects and is engaged, with the Department of Energy, in a scheme of demonstration projects designed to reduce any technical and economic uncertainties which may be associated with the introduction of energy conservation measures (page 24).

Examples of R&D and demonstration projects funded by the department include work at the British Ceramic Research Association on improving the efficiency of intermittent kilns, on the reduction of heat losses into tunnel kiln trucks and on waste heat recovery from tunnel kilns; work at the British Glass Industries Research Association on improving energy utilisation in the glass industry; and work, at the Drop Forging Research Association, designed to demonstrate the practicability and effectiveness of ceramic fibre linings in batch forge furnaces.

Some of the R&D programmes supported by the department have an indirect but important bearing on energy conservation. For example, the joint United Kingdom Atomic Energy Authority/National Engineering Laboratory heat transfer and fluid flow service provides assistance in meeting the stringent demands now being placed on the design of heat transfer equipment and the department makes a major contribution to the cost of the background research which is needed to provide this service. The department's activities in the field of research, development and demonstration projects related to energy conservation are co-ordinated with those of other departments through the inter-departmental committee on energy conservation R&D (Encord) and the Encord programme committee.

Two important schemes which can provide assistance for the development of new energy-efficient processes are the product and process development scheme and the microprocessor application project. The product and process development scheme consolidates and extends the support available under the Science and Technology Act 1965 for the development of new products and processes by manufacturing industry. Assistance is provided in several ways, including grants towards projects put forward by companies, shared-cost contracts, and pre-production order support. Help can be given for development costs from the design stage up to the point of commercial production.

The microprocessor application project makes assistance available to encourage UK industry in applying microprocessor technology to a wide range of its products and production processes. Assistance under the scheme is provided on a selective basis and is available to all sectors of UK manufacturing industry. The scheme involves industrial awareness and training; consultancy support and initial feasibility studies; and microprocessor application support. Firms may obtain assistance under any or all three stages of the scheme for the same project. Microprocessor technology is now being used to achieve efficient and economic control of many industrial processes. It is likely to provide one of the keys to the more effective and economic use of energy in the future.

Warm response to energy-saving scheme

There has been an encouraging response to the Department of Industry's £25 million energy conservation scheme, introduced in June, under which grants are made available for more efficient boilers and improved insulation of industrial and commercial premises. To date, the department has received over 500 applications for assistance and over 150 offers of grant for consultancy assignments have been sent out.

Immediately after the scheme's introduction on 13 June, an intensive advertising campaign started and a flood of requests for literature was received. During the first month, about 10 000 copies of the department's booklet 'Notes for the guidance of applicants' were sent out and the telephones were constantly ringing with inquiries. There was a similar story at the regional offices, where the energy conservation officers were kept extremely busy answering enquiries and sending out literature. Requests for literature and information are still coming in, about 40 letters and telephone enquiries being received daily.

Following the advertising campaign, the first applications were received and they are now running at between 20 and 30 a week. So far, these have been mainly for consultancy assignments leading eventually to actual projects but, more recently, applications for boiler and insulation projects are beginning to come through. These are expected to increase as applications for project assistance start coming in following the initial consultancy assignments.

The importance of energy conservation, in the context of the government's Industrial Strategy is now widely recognised; and there is an increasing awareness of the potential cost savings to industry and commerce with the consequent benefits in terms of efficiency and competitiveness. The energy conservation scheme operates under the mechanism of section 8 of the Industry Act, 1972, and is one of a number of section 8 schemes – 16 in all – designed to promote greater efficiency in industry. Whereas the other schemes are aimed at boosting investment in a particular sector of industry, this scheme covers practically the whole range of private industry and commerce.

Assistance for energy-saving measures is provided for the owners of the equipment which is to be replaced or modernised. There is also an advantage to the suppliers and manufacturers of the plant and equipment who should benefit through the new orders being placed. With a total investment of about £100 million expected over the two years' life of the scheme, and with the additional investment from other government schemes, the opportunities for UK manufacturers of boiler plant, controls and insulation materials can be described not merely as a modest spin-off from the energy conservation scheme, but as a real and substantial benefit to those companies engaged in the manufacture and installation of energy conservation products.

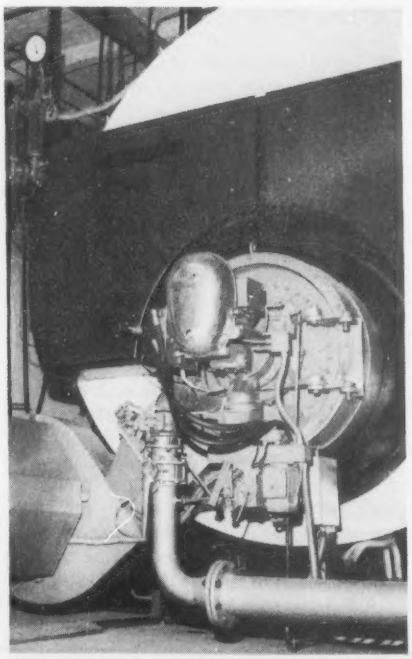
Having made the decision to provide assistance to industry and commerce, through the medium of the energy conservation scheme, the next step was to select from the many potential energy-saving measures available those which could fit most easily into a scheme of this type. Among the factors to be considered were the likely energy-saving yield, the likely number of applications and the ease of administration.

With these considerations in mind, the scheme was limited to the replacement and modernisation of boilers, insulation of premises and to the replacement of combined heat and power systems. Special factors in favour of boilers and insulation were that research had shown that a large number of old and inefficient boilers existed in industry and commerce and that there were many badly insulated buildings. Certain qualifying conditions were laid down, relating to the efficiency of the existing plant and insulation and to the minimum project costs.

The scheme as planned was expected to produce several thousand applications during the two years of the scheme: mostly for boilers, insulation and consultancies, but also a few for combined heat and power systems. But, of course, there was a large element of guesswork in the estimates, given the very large number of potential applications.

If the present trend continues, the number of applications received will be roughly in line with what was forecast. However, the average cost of the proposed boiler projects is, so far, much higher than anticipated, and more

One of two new £50,000 boilers installed at Firth Carpets Ltd, Brighouse, Yorkshire. The cost will be recovered through fuel savings within 2½ years.



proposals for combined heat and power systems have been received than were expected at this early stage.

At this date, the scheme can be judged a success if measured by the number of applications being received. Certainly the wide and continuing interest being shown in the scheme augurs well for energy conservation generally. The proof of the economic advantages will be at a later stage when projects are completed and an assessment can be made of the actual energy-savings which result from the increased investment.

Energy conservation scheme

Under the energy conservation scheme, grants are available to undertakings in most sectors of industry, trade and commerce throughout the UK for approved schemes which involve:

Replacing or modernising boiler plant. A capital grant of 25 per cent of the net eligible costs is available for:

- ☐ Replacement of boilers with thermal efficiency below or close to 70 per cent by either improved boilers or alternative energy-conversion plant
- ☐ Ancillary equipment for replacement boilers
- ☐ Ancillary equipment, such as waste heat recovery systems, control and measurement systems and new burners for existing boilers.

The minimum total project cost under this part of the scheme will normally be £15,000 except for ancillary equipment for existing boilers where the minimum will normally be £5,000.

Insulation of premises. A capital grant of 25 per cent of the net eligible costs will be available for projects where an approved consultant considers that:

- ☐ the building concerned is in adequate condition and has a life expectancy of 10 years
- ☐ the building has an existing average overall 'U' value of 3 W/m² °C or greater
- ☐ a worthwhile reduction of energy use will result

The minimum total project cost under this part of the scheme will normally be £3,000.

Combined heat and power systems. Assistance is in the form of a capital grant. The department has to be satisfied that without the grant the project would not go ahead as soon or as comprehensively as proposed. The amount of the grant is negotiable. Grants are available for:

- ☐ Replacing an existing boiler with a thermal efficiency below or close to 70 per cent by a combined heat and power system
- ☐ Replacing an existing combined heat and power system by an improved one
- ☐ Modernising an existing combined heat and power system

The minimum total project cost under this part of the scheme will normally be £100,000.

Proposals submitted under the scheme must be based on an appraisal by a consultant. However there are also grants to cover 50 per cent of agreed consultancy fees for formulating the report required in preparing a proposal and 50 per cent of the agreed cost of employing a consultant to supervise or inspect work carried out after a proposal has been approved. Grants paid under the scheme will be in addition to any applicable regional development grant or Northern Ireland equivalent although they will be calculated on costs net of regional development grant or Northern Ireland equivalent.

This superb leisure pool at the Northgate Centre, Chester, is warmed by a heat-pump system supplied by Prestcold.

Achieving major savings

Buildings absorb nearly half the nation's fuel consumption every year, at a cost of £8,000 million, and housing uses twice as much fuel as all other buildings taken together. Energy conservation activities undertaken by the Department of the Environment are already beginning to make an impact on existing and new construction, as Hugh Ellis-Rees, responsible for energy conservation at the department's construction industry directorate, explains.

The Department of the Environment is concerned to improve the efficiency of energy use in all buildings, but housing offers the best dividends. The action already taken is designed to achieve major savings rapidly, mainly through a series of easily applied measures. Two of the main schemes tackle the problem of heat wasted in housing through poor insulation. Over the next ten years it is hoped to achieve a basic standard of insulation in all public sector dwellings through loft insulation, lagging of water pipes and tanks and draughtstripping. In the private sector the Homes Insulation Act provides grants of up to £50 for loft insulation and lagging. The combined cost of the two schemes is over £50 million a year and seven million dwellings are in line for treatment.

Other buildings are not being neglected. Additional provision of £22 million a year is being made available to local authorities for tackling the problems of saving energy in schools and other non-domestic buildings. Authorities will be adopting a variety of measures ranging from basic insulation to more sophisticated techniques such as the introduction of improved timing controls for heating systems. Efficient energy management is seen as particularly important and more staff will be employed for that purpose. New building regulations come into force next year specifying insulation standards in new non-domestic buildings and regulations about heating controls are likely to follow shortly.

The Property Services Agency has been

pushing energy conservation in the government's civil estate. A programme of training, monitoring and improving controls, coupled with more basic insulation work, has achieved 30 per cent fuel savings a year ahead of schedule, and the agency believe it can improve further to meet a revised target of 35 per cent. The expertise which the department has built up is being made available to commercial and other energy users through a new training and advisory service (page 20).

Further measures

All the obviously desirable measures offering quick returns have now been put in train, and much work will be needed to establish what further measures to meet energy saving targets will prove cost-effective and free from health and other hazards. Buildings last many years, and at every level, personal or corporate, represent a major investment. It is extremely important to be sure that the right solutions are chosen. The department therefore carries out a substantial programme of research and development, at a cost currently of £1.2 million a year. Much of the work is done in-house, though some is contracted out. The aim is to provide designers, suppliers and consumers with up-to-date technical guidance as well as providing a foundation for government policies.

The Building Research Establishment's research programme places its main emphasis on housing, but other projects include a study of a low energy school at Irvine, building an experimental low energy office at BRE itself and work applicable to a wide range of non-domestic buildings. The programme covers many topics including economic, planning and design aspects of energy conservation; various aspects of heating and lighting, including work on heat pumps and solar space and water heating; thermal comfort; insulation; and ventilation.

An interesting new feature of the housing programme involves experiments with four low energy house laboratories which include most of the ways energy consumption could be reduced in future housing. Some measures are also relevant to existing housing. Some offer good prospects of cost-effectiveness, such as the recovery of heat from waste water. Others such as solar heat storage appear far too expensive at present. The houses also incorporate high thermal insulation levels using two different construction methods, as well as heat pumps used in a variety of ways. Two of the houses are complete and the measuring equipment is being installed. Tests will be carried out under conditions of simulated occupancy so that their performance under typical and extreme conditions of use can be assessed.

The air conditioned environment maintained by a Johnson Controls Ltd system, in the new Scottish Widows headquarters staff restaurant, is an example of efficient building management with cost-saving benefits.

Better insulation

The housing development directorate is increasingly undertaking energy-based research and development work for new and existing housing. Much of the work centres on the Better Insulated House Programme, started in 1972. Originally designed to evaluate the savings achievable by improved insulation in new houses, the programme has since been expanded to include recent existing housing with cavity walls and the rehabilitation of older solid wall housing. The objective is to discover the consequences of increased insulation for a wide variety of types of construction and to monitor the performance and cost-effectiveness of both the building fabric and the different types of heating system used. A supporting social survey is made for each project to explore the differences in thermal performance attributable to the living pattern of householders.

Work designed to explore in greater depth some of the issues arising from the Better Insulated House Programme is being undertaken in conjunction with the National Building Agency. It will look at details of the design, construction and cost of walls with very high insulating qualities and the implications for the design of heating and ventilation systems. Work on existing dwellings include a major study in conjunction with Birmingham City Council of the design and cost consequences of different levels of thermal improvement over a wide range of types of dwelling, including older houses and post-war high-rise developments.

Much other work is aimed at increasing knowledge and awareness of the problems of energy conservation and the best solutions to them. A joint central/local government working party produces advice for housing authorities on matters relating to heating and insulation in public sector housing. A housing development directorate project is exploring practical ways of increasing the thermal comfort of older people, and the department is represented on a governmental group looking at the effects of fuel prices on the poor.

But it is already clear that the challenge of increasing energy consumption, diminishing stocks and higher prices will impose greater demands in the years ahead, and that the achievement of an acceptable environment without unacceptable resource costs will require both technical ingenuity and administrative skill and persistence.

Guide to energy conservation

Energy conservation scheme
£25 million is available over two years as part of the government's campaign to encourage the more efficient use of energy. The scheme is designed to help organisations in industry and commerce save energy by replacing or improving inefficient boiler plant and/or by insulating premises and/or installing or improving combined heat and power systems. Proposals must normally be based on an appraisal by a consultant. (Page 16).
Contact: Department of Industry, Energy conservation scheme, Abell House, John Islip Street, London SW1P 4LN, tel. 01-211 5380/7080/7121.

Energy conservation demonstration projects
To encourage the more widespread adoption of energy conservation technologies in the UK, cash grants are offered to energy users wishing to collaborate in approved demonstrations which may relate to any aspect of energy use. Selected projects fall mainly into two categories; those involving new applications of established energy conservation technology and those which apply novel, improved or modified energy conservation technology. (Page 24).
Contact: Energy Technology Support Unit, AERE, Harwell, Oxfordshire OX11 0RA, tel. Abingdon 24141.

Energy survey scheme
An initial subsidy of up to £75 is provided towards the costs, exclusive of VAT, of employing an accredited fuel consultant on a one-day energy survey of industrial, commercial or public sector premises. The scheme also provides for a more detailed and comprehensive review of overall energy usage, frequently called an energy audit. For this a 50 per cent subsidy of the costs will normally be available but prior approval in writing from Department of Energy must be obtained before work begins.
Contact: Energy conservation division, Department of Energy, Thames House South, Millbank, London SW1P 4QJ, tel. 01-211 5229/3347.

Energy quick advice service
A free service on a national basis to deal with telephone queries from all non-domestic energy users on how to save energy and use it most efficiently. Consultants under contract to Department of Energy answer questions orally on the telephone or by a short letter.
Contact: Freefone, dial 100 and ask for: 3140 for building service, throughout UK; 6222 for industry service, England and Wales; 8305 for industry service, Scotland.

Industrial energy thrift scheme
One day free visits are made by research associations and consultants to selected factory sites to advise on improvements in process efficiency and 'good housekeeping' practices; to gather information on existing patterns of energy use in manufacturing industry; and identify energy-saving opportunities and the needs for further R&D to improve energy utilisation. A major publication programme is now under way so that industry can be informed of the results which have been obtained. It is proposed to continue the programme of visits until 31 May 1981 to include those parts of industry not already covered.
Contact: Energy Unit, Department of Industry, Abell House, John Islip Street, London SW1P 4LN, tel. 01-211 3176/5321.

Conditional aid
Firms applying for aid under the Industry Act and Science and Technology Act are encouraged to review energy use and to take expert advice in relation to the project concerned.

Instrumentation and automation scheme; selective investment scheme; product and process development scheme; and microprocessor application project.
Contact: Department of Industry, Room 309, Dean Bradley House, 52 Horseferry Road, London SW1P 2AG, tel. 01-212 6986.

Footwear industry scheme
Contact: Department of Industry, Room 617, Ashdown House, 123 Victoria Street, London SW1E 6RB, tel. 01-212 0303.

Drop forging industry scheme
Contact: Department of Industry, West Midlands Regional Office, Ladywood House, Stephenson Street, Birmingham B2 4D, tel. 021-632 4111.

Red meat slaughterhouse industry scheme
Contact: Ministry of Agriculture, Fisheries and Food, PPP Division, Room 322, Whitehall Place West, London SW1A 2HH, tel. 01-839 7711, ext 7158.

R&D requirements board projects
Contact: Mr C. J. Whapham, Department of Industry, Abell House, John Islip Street, London SW1P 4LN, tel. 01-211 5882.

Regional development grants
Available to manufacturing industry in special development areas and in development areas in respect of plant and machinery, including plant and machinery for energy conservation.
Contact: Department of Industry regional offices (page 20).

Tax allowances for insulation
A 100 per cent first year tax allowance may be claimed for expenditure on the insulation of an existing industrial building against loss of heat.
Contact: Local tax inspectors.

Industrial energy audit scheme
Detailed investigations of energy use in selected energy intensive industries and the engineering industry have been carried out by the research association appropriate to the industry concerned in order to determine the amount of energy used to manufacture products, the breakdown between processes and the areas where significant energy saving is possible. The results are being published in a series of reports (see page 21).
Contact: Energy Unit, Department of Industry, Abell House, John Islip Street, London SW1P 4LN, tel. 01-211 3176/5321.

Audits by energy technology support unit
Consists of research studies and recommendations on the lines of industrial energy audit scheme (above) but with other energy intensive industries. Reports have been published on the building brick and iron casting industries.
Contact: Energy Technology Support Unit, AERE, Harwell, Oxfordshire OX11 0RA, tel. Abingdon 24141.

Industry energy conservation seminars
A Department of Industry series of one day seminars which began in Autumn 1977 to encourage more efficient use of energy in manufacturing industry and inform industry of the results of the thrift and audit schemes and energy technology support unit studies.
Contact: Energy Unit, Department of Industry, Abell House, John Islip Street, London SW1P 4LN, tel. 01-211 3176/5321.

Regional energy conservation officers
Within each of the Department of Industry's regional offices, a senior member of staff has been appointed to specialise in energy conservation, and these officials establish and maintain links with energy managers in industry, as well as local authorities in their particular area. (See list on this page.)

Energy management
Government policy is to harmonise energy conservation with the improvement of industrial efficiency, through voluntary and effective energy management by industry. The current EEC recommendation on energy management in industry is already implemented in the UK. National energy management conferences were held in September 1977 and October 1978.
Contact: Energy conservation division, Department of Energy, Thames House South, Millbank, London SW1P 4QJ, tel. 01-211 5229/3347.

Energy manager groups
Organised through the regional energy conservation officers, the groups provide a forum for the development and exchange of ideas on conservation, and the education and encouragement of energy managers. Over 50 clubs have been founded.
Contact: Regional energy conservation officers, listed below.

Advisory/training service
£½ million per year has been made available to set up a new government advisory and training service to promote efficient energy management.
Contact: Department of the Environment, Room S10/22, 2 Marsham Street, London SW1P 3EB, tel. 01-212 8568.

National energy managers' courses
A series of courses are being conducted at the British School of Fuel Management for the Department of Energy, to train energy managers to implement an effective cost-related energy management programme.
Contact: Energy conservation division, Department of Energy, Thames House South, Millbank, London SW1P 4QJ, tel. 01-211 5229/3347.

Grants for insulation of private sector houses
The Homes Insulation Act, which came into operation on 18 September 1978, gives financial incentives of £15 million for 1978-79 and £25 million for 1979-80 to private householders to encourage the installation of basic insulation. Grants will be at the rate of 66 per cent of certified expenditure subject to a maximum of £50.
Contact: Department of the Environment, Room N7/02, 2 Marsham Street, London SW1P 3EB, tel. 01-212 4023.

Efficiency of heating appliances
Efficiency of many forms of heating domestic appliances is voluntarily prescribed by British Standard Specifications.

The Department of Energy took the lead in developing the new British Standard 5615 for domestic hot water tank jackets, published on 7 September 1978. Most manufacturers have indicated that they will make jackets only to this standard. A number have applied also to be covered by the 'Kitemark' certification scheme. The necessary test equipment is currently under construction and it is anticipated that 'Kitemark' licences will start to be issued in early 1979.
Contact: British Standards Institution, 2 Park Street, London W1A 2BS, tel. 01-629 9000.

Energy conservation officers

Northern region
Miss M. Scatcherd, Northern Regional Office, Stanegate House, Groat Market, Newcastle-upon-Tyne NE1 1YN, tel. Newcastle-upon-Tyne 24722 ext. 218.

North west region
Mr R. F. G. Gardner, North West Regional Office, Room 722, Sunley Buildings, Piccadilly Plaza, Manchester, M1 4BA, tel. 061-236 2171 ext. 540/612.

Yorks and Humberside region
Dr G. J. Bennett, Yorkshire and Humberside Regional Office, Room 30, Priestley House, 1 Park Row, Leeds LS1 5LF, tel. Leeds 443171 ext. 288.

West Midlands region
Mr A. Mendoza, West Midlands Regional Office, Room 707, Ladywood House, Stephenson Street, Birmingham B2 4DT, tel. 021-632 4111 ext. 539.

East Midlands region
Dr H. N. Stewart, East Midlands Regional Office, Severns House, Middle Pavement, Nottingham NG1 7DW, tel. Nottingham 56181 ext. 282.

South west region
Mr G. Madden, South West Regional Office, Room 535, The Pithay, Bristol BS1 2PB, tel. Bristol 291071 ext. 204.

Eastern region
Mr R. G. Lea, Eastern Regional Office, Market Place House, Reading, Berks RG1 2EN, tel. Reading 581261 ext. 324.

Mr B. Kerrison, Eastern Regional Office, Room 680, Charles House, High Street, Kensington, London W14 8QH, tel. 01-603 2070 ext. 365. (Essex and east Anglia).

London and south east
Dr A. G. Franklin, London and South Eastern Regional Office, Charles House, High Street, Kensington, London W14 8QH, tel. 01-603 2060 ext. 209.

Wales
Mr F. Jones, Industrial Department/Welsh Office, Government Buildings, Gabalfa, Cardiff CF4 4YL, tel. Cardiff 62131.

Scotland
Miss E. M. Wright, Scottish Economic Planning Department, Industrial Development Divison, Alhambra House, 45 Waterloo Street, Glasgow C2 6AT, tel. 041-248 2855, ext. 358.

Northern Ireland
Mr T. D. Carruth, Energy Conservation Division, Department of Commerce, Chichester House, Chichester Street, Belfast, Northern Ireland, tel. Belfast 34488 ext 420.

Heat loss through leaking steam valves can be doubly expensive if the cost of sealing the leak includes that of shutting down the plant while the job is done. This ICI picture shows a leak being sealed using the Furmanite process while the plant is still live.

Government measures

Information and advisory services
The programme of energy conservation measures announced by the government on 12 December 1977 included the allocation of £4 million in 1978-79 and £5 million in each of the next three years to expand information and advisory services to industry.

This covers a commitment to a three-year extension, starting 1977-78, of the 'Save It' publicity campaign to use all media to communicate the need for and most cost-effective techniques available for energy saving in the domestic sector. £1.9 million allocated for 1978-79, part of which has been spent on a television campaign aimed at the domestic sector last autumn to encourage more insulation.

Since 1975, the chairmen of the fuel industries have agreed to promote energy conservation and also to co-ordinate and co-operate with the Department of Energy in continuing the promotion of energy conservation through advertising campaigns and advice to consumers.

Heating limit
A maximum statutory limit of 20 °C has been set for all non-domestic buildings, with some exemptions, by statutory instrument under the Energy Act 1976.

Advertising lighting
A voluntary code (replacing previous arrangement) on advertising lighting came into effect on 1 December 1976.

Company reports
The government has invited companies to state in their annual reports the expenditure on fuel and the steps taken to save energy.

An Abacus Conference

RISK REDUCTION
Understanding bus

Tuesday, 12th December 1978

Abacus Conferences Limited

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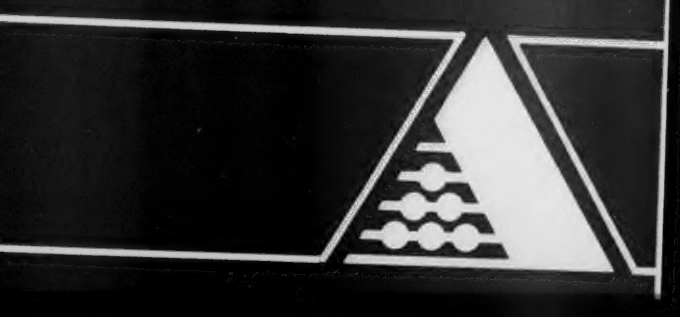
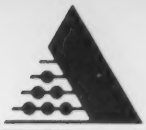


INTRODUCTION



RISK REDUCTION – UNDERSTANDING BUSINESS CONTRACTS

The law is rapidly changing. New statutory liability means new and bigger risk factors in manufacture, sale and supply. The daily conduct of a business continually generates contracts which have enforceable status; the trend to consumerism and the growth of product liability law make vigilance in the drafting of contracts increasingly important. Many businessmen are aware of this need, but are not familiar with the constitution of the contract or the extent to which, for example, written conditions of sale may be modified by a salesman's oral assurance to his customer.

This conference has been designed to give general managers, sales and purchasing directors and company secretaries a clear picture of the law governing business contracts and the pitfalls to be avoided. A special feature will be the paper on preventive action by negotiating and drafting contracts that will withstand challenge – "the objective of the businessman is not so much to succeed in litigation, but to avoid it".

PROGRAMME

Chairman: **Peter G. Churchill,** Barrister, Editor of "Contract Only". Author of "Leasing for Lessees", "Business Contracts"

09.30 **Chairman's Introduction**

09.45 **Contracts and the Larger Company**
Product Liability; Distributorship Agreements; Manufacturers' Warranties and the New Law; Title Reservation Techniques; Sale-or-Return.
Speaker: **H. D. Husbands,** Director of Legal Affairs, Ford Motor Company Limited.

10.40 **Coffee**

11.00 **"My Word is My Bond"**
Contracts made informally in commodity markets and elsewhere. Misunderstandings and disputes. Settlements by negotiation and by arbitration.
Speaker: **Robert Gibson-Jarvie,** B.A., Fellow of the Institute of Arbitrators.

11.50 **The Financial Viewpoint**
Money supply for manufacture, promotion and sales. Is no business better than bad business? How contract terms can affect funding, cash flow and profitabiltiy.
Speaker: **David N. James,** of the Rank Organisation. Managing Director, English Numbering Machines Ltd.; Rank Credit Facilities Ltd.

12.40 **Luncheon**
Guest Speaker: **Stephen Hastings,** M.C., M.P.

14.15 **Agency Law and Company Law Affecting Contracts**
The Companies Acts; The Law of Agency; Sale of Goods; Inter-company Restrictive Agreements.
Speaker: **Lady Oliver,** M.A., Barrister, Head of Department of Law, City of London Polytechnic. Author of "Company Law", "Cases on Company Law", "The Private Company in Germany".

15.05 **Tea**

15.25 **Prevention by Care in Drafting**
The measure of damages when things go wrong. How litigation may be avoided by careful negotiation and drafting of contracts. "Reasonableness" in contracts as required by law and by good commercial practice.
Summing up of Conference salient points.
Speaker: Peter Churchill

16.15 **Panel Discussion**

16.45 **Close of Conference**

There will be a period for questions at the end of each paper

REGISTRATION FORM

RISK REDUCTION – UNDERSTANDING BUSINESS CONTRACTS

Tuesday, December 12th 1978 Kensington Palace Hotel, London W8

To: **Abacus Conferences Limited,** 3 North Street, Bourne, Lincolnshire PE10 9AE

Please reserve place (s) for the following delegates. A cheque for £ . . . . . .
(£75.60 per delegate including VAT) is enclosed.

Name Position

_____

_____

Name and Address of Firm _____

Telephone _____

Registered in England No. 1370994 V.A.T. Registration No. 313 1281 09

A VAT Invoice will be sent with the admission card (s)

GENERAL INFORMATION

Date: Tuesday 12th December 1978

Location: Kensington Palace Hotel
de Vere Gardens, London W8.
Telephone: 01-937 8121
Telex: 262421

Fee: £70 per delegate plus VAT (Total £75.60), which includes morning coffee, cocktails, luncheon, afternoon tea and conference documentation.

Cancellations: Reservations cancelled in writing more than a clear week before the conference date will be refunded, less a 10% administration charge. Late cancellations cannot be refunded, but substitution of delegates may be made.

Enquiries: Abacus Conferences Limited,
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Telephone: Bourne (077 82) 4471

Accommodation:

Delegates wishing to stay at the Kensington Palace Hotel for the conference should book direct, mentioning Abacus Conferences; special terms are available.

National Economic Development Council
At the request of the government, the National Economic Development Council and its sector working parties are considering means to make energy conservation more effective in industry.

Targets
Officials of the Department of Energy meet trade associations to encourage industry to set its own energy-saving targets.

Degree days
Degree day figures are published monthly in *Energy Management*, the Department of Energy's newspaper, and in *Trade and Industry*.

This service is designed to help industry and commerce improve the efficiency with which space heating systems are used. The figures are a record of the extent and length of time in a particular month that the external temperature fell below a base figure of 15.5°C. Because this affects the amount of fuel needed to provide a given level of space heating the figures can be used to check on the efficiency of heating systems. By comparing the amount of fuel used with the number of degree days in monthly periods of different years, energy managers and others can monitor the performance of heating plant and operate it more economically.

Building regulations
In January 1975, insulation requirements for new dwellings were roughly doubled. Amendments introducing standards for new non-domestic buildings will come into force in 1979.

Insulation regulations
The Thermal Insulation (Industrial Buildings) Regulations 1972 prescribe standards for the roofs of industrial buildings. When the amended building regulations come into force in 1979 these regulations will be revoked.

Speed limits
Except where lower limits are indicated by signs, national speed limits are 70 mph on motorways and dual carriageways and 60 mph on all other roads.

Fuel consumption testing/labelling
Under powers in the Energy Act, from 1 April 1978 any new car offered for sale must carry a label giving the relevant official fuel consumption test results. Dealers must have available for inspection a copy of the official list of fuel consumption figures for all cars which have undergone the official tests.

Education programme
The government has allocated an additional £½ million a year over next four years to information and publicity campaigns aimed at persuading motorist to see that cars are well maintained and to drive in a more economical way.

Public buildings
The government's Property Services Agency continues to make substantial savings in energy usage in government buildings through good management, a programme of installation of heating and internal temperature controls and thermal insulation and draughtproofing measures. Under the 12 December 1977 package the PSA is to extend its existing programme at a cost of £5 million a year. This will enable continued progress towards the eventual target saving of 35 per cent on fuel used in 1972-73.

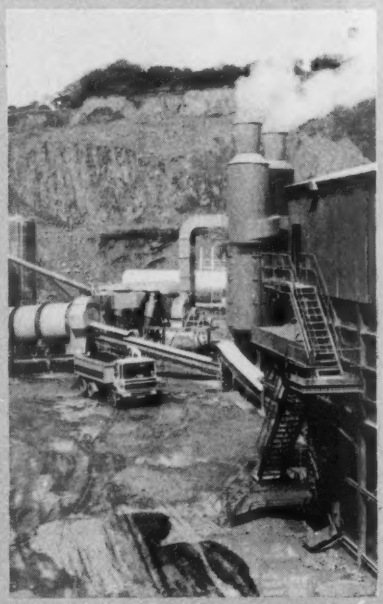
National health service and educational buildings
As part of a long term programme for installing insulation and heating controls it is planned to invest an additional £5 million in NHS buildings in 1978-79 and £10 million in each of the three succeeding years. An additional £10 million in 1978-79 and £20 million in each of the three succeeding years is to be invested in educational buildings.

Public sector housing
A ten year programme for the basic insulation of public sector housing was announced in December 1977. Loan sanction for over £100 million is available to local authorities over the next four years. This measure is in addition to existing limited schemes which are aimed primarily at the elderly and/or infirm with loft insulation and draught proofing. In addition £2 million a year will be spent on improving the insulation of Ministry of Defence dwellings.

Local authority buildings
In addition to a programme of local insulation for local authority dwellings it is proposed to discuss with local authorities opportunities of saving energy in non-domestic buildings other than schools. Additional funds of up to £7 million a year are to be made available for the necessary staff to secure efficient energy management and for the installation of heating controls.

Loft insulation
Local authorities were encouraged by a circular of August 1976 to employ otherwise unemployed people at government expense to insulate the lofts of local authority housing and other buildings with materials purchased at a discounted rate negotiated nationally with manufacturers by government. Up to the end of December 1977 projects involving nearly 110 000 houses and many other public buildings were approved. It is intended that roof insulation will continue under these new schemes especially in areas of high unemployment.

Fuel savings of 10 per cent have recently been achieved at ARC Western's quarry at Warley, west Midlands.



Information material

The government uses all media to communicate both the need for and recommended methods to achieve industrial energy conservation.

Free publications
Available from the Library, Department of Energy, Thames House South, Millbank, London SW1P 4QJ.

Energy conservation in industry. *A simple checklist of action – or a plain man's guide to energy conservation in industry and commerce.*

'Save It' stickers. *For use with light switches.*

'Turn off when not in use' stickers. *For use on powered machinery.*

Posters. *Nine in number – ranging from closing doors and windows to keep warmth in to switching off main power switches and escaping compressed air.*

'Energy management.' *A newspaper produced monthly and mailed to energy managers and all interested in the efficient usage of energy.*

Fuel efficiency booklets:

1. Energy audits
2. The sensible use of latent heat
3. Utilisation of steam for process and heating
4. Compressed air and energy use
5. Steam costs and fuel savings
6. Flash steam and vapour recovery
7. Degree days
8. The economic thickness of insulation for hot pipes
9. How to make the best use of condensate
10. Controls and energy savings
11. Energy audits 2
12. Lighting
13. The recovery of waste heat from industrial processes

Energy trends. *A monthly statistical bulletin of energy production and consumption*

Energy audit series no 1: a report on the iron casting industry

Energy audit series no 2: a report on the brick industry

Energy audit series no 3: a report on the dairy industry *(to be published shortly)*

Energy survey scheme. *Descriptive leaflet and application form*

Energy survey scheme – extended survey. *Descriptive leaflet and application form*

Energy quick advice service. *Descriptive leaflet on the means of obtaining quick advice using a Freefone service*

Also available free of charge from the Librarian, Department of Industry, Abell House, John Islip Street, London SW1P 4LN.

Industrial energy thrift scheme: a preliminary analysis of the potential for energy conservation in industry.

Industrial energy thrift scheme: report no 1. Energy use in the woollen and worsted industries.

Publications of the joint working parties on heating and energy conservation in public sector housing, available from the Department of the Environment, HDD, Room 1107, Becket House, 1 Lambeth Palace Road, London SE1 7ER:

An exploratory project on heating for the elderly. *Price £1.00*

Domestic energy notes:

1 Selection criteria for electric space and water heating systems in new dwellings. *Price 30p.*
2 Condensation in domestic pitched roof spaces *Price 20p.*
3 Remedial work for existing electrically heated dwellings. *Price 45p.*

Available free of charge from Department of the Environment, Miss V. F. Martin, Distribution Building, 3 Victoria Road, South Ruislip, Middlesex HA4 0NF.

Warmth kept in – keeps heating costs down.

Films

Three films are currently available on free loan from the Central Film Library, Government Building, Bromyard Avenue, Acton, London W3 7JB. Copies may be purchased as 16 mm film, Philips or Sony video tape recordings.

Save it – Energy in Industry *(30 mins, colour). Illustrating three major ways of saving energy: good housekeeping; fuel economy; and energy recovery.*

Audit *(30 mins, colour). Illustrates the crucial role played by an energy audit in achieving efficient energy usage.*

The SAVER approach *(20 mins, colour). How one firm set about saving energy by calling in a fuel consultant for a one day's visit under the* energy saving scheme.

The three latest films which will be available from the same source, cover the following subjects:

Oil and gas fired furnaces
Burners for boilers
Factory heating and ventilation

These short technical films, the first of a series dealing with different aspects of energy saving technology, are to form the core of a new series of 'Managing energy' information packs for industrial use. Each film will be distributed with speakers notes and a quantity of invitation cards and specially produced booklets, to enable energy managers and others concerned with training to mount 'instant seminars' on specific subjects.

Priced publications

The following publications are available from HM Stationery Office:

Energy paper no. 3. Advisory council on energy conservation: report to the secretary of state. *Price 80p.*

Energy paper no. 4. Energy: the key resource. *Price 43p.*

Energy paper no. 5. Energy saving: the fuel industries and some large firms. *Price £1.85.*

Energy paper no. 6. Advisory council on energy conservation paper 1: policy statement by the TUC. *Price 65p.*

Energy paper no. 10. Advisory council on energy conservation paper 2: passenger transport, short and medium term considerations. *Price 90p.*

Energy paper no. 12. Advisory council on energy conservation paper 3: energy prospects. *Price £1.10.*

Energy paper no. 15. Advisory council on energy conservation paper 4: industry group report session. *Price £1.20.*

Energy paper no. 18. Advisory council on energy conservation paper 5: road vehicle and engine design, short and medium term energy considerations. *Price £1.75.*

Energy paper no. 20. District heating combined with electricity generation in the UK. *Price £3.75.*

Energy paper no. 22. Energy policy review. *Price £1.75.*

Energy paper no. 24. Advisory council on energy conservation paper 6: freight transport, short and medium term considerations. *Price £1.50.*

Energy paper no. 25. Advisory council on energy conservation paper 7: report of the working group on buildings. *Price £1.50.*

Energy paper no. 26. Advisory council on energy conservation paper 8: energy for transport. *Price £1.25.*

Energy paper no. 31. Advisory council on energy conservation: (second) report to the secretary of state.

Energy policy. A consultative document *(green paper)*. Cmnd 7101. *Price £2.15.*

Warmth without waste. *Price 4p.*

Lagging water systems. *Price 4p.*

Thermal insulation. *Price £1.75.*.

Thermal insulation of buildings. *Price £1.75.*

Condensation in dwellings:
Part 1. Design guide. *Price £1.00*
Part 2. Remedial measures. *Price £1.25.*

A consultant tours a factory with the firm's energy manager and stresses a systematic approach to energy management while pointing out specific areas of energy work in the Department of Energy's film 'The SAVER Approach'.

A new discipline

Over three thousand energy managers have been appointed in industry, commerce, retailing and the public sector and are already making a valuable contribution to their organisations. Energy management is a new discipline calling for a knowledge of energy use in an organisation and an ability to identify opportunities for energy saving investment. To help energy managers in their work, particularly in seeking sources of advice and identifying common problems, the Department of Energy has set up over 50 energy manager groups right across the country through the Department of Industry's regional organisation (page 20). Terry Henshaw of the Amey Roadstone Corporation Ltd is chairman of the Avon and Somerset energy managers group, the first to be established in the UK. He makes the point in the following article that groups such as his are proving extremely valuable in helping energy managers do their work more effectively.

In the UK, our four main energy resources are oil, coal, gas and nuclear electricity. To these, we can add a fifth resource – energy conservation. This is equally as important as the other four. Now, more than ever before, energy saved is as useful as energy produced.

Before the oil crisis of 1973, fuel was comparatively cheap and in most industries represented only a small proportion of manufacturing costs. As managers, we were aware of energy costs in relation to others but as our efforts could be more productively used elsewhere, and energy conservation measures only marginally improved the situation, we were not too concerned.

The recent and continuing rise in fuel costs has, or should have, demanded that we all take a much closer look at the way we use energy. Time spent on energy management is financially rewarding. Energy conservation projects are now a wise capital investment. The law of increasing returns applies to any such project as the cost savings gained increase at the same rate as energy costs. Energy management is good management and correctly applied can make a major ongoing contribution to the profitability of any company.

In January 1975, the Department of Energy launched the 'Save it' campaign and encouraged industry to appoint energy managers. This provoked an encouraging response from the south-west region. Those appointed came from a variety of disciplines including works management, production engineering and accountancy. There was also considerable variation in the level of appointment according to the type of undertaking. The individual approach also varied, but each energy manager shares a common objective – to reduce costs by the more efficient use of energy.

In the early days a disproportionate amount of time was spent on obtaining information and there was considerable duplication of effort. Many worked in isolation. The problems were recognised by the regional office of the Department of Industry who arranged four exploratory meetings in the main industrial areas of the region – North Gloucestershire, Bristol, Plymouth and Poole. These meetings confirmed that regular opportunities to exchange views and experience would be welcome.

The encouraging response for these and subsequent meetings showed that energy managers groups could be set up and have a useful and continuing future. Subsequently four groups were formed in the south-west covering the areas of Devon and Cornwall, Dorset and South Wiltshire, Gloucestershire and north Wiltshire and Avon and Somerset. Incidentally, my own group Avon and Somerset was the first to be established in the UK, being formed in December 1976.

Total membership of the four south-west groups exceeds 250, representing a very wide range of interests including types of industry and commerce, local and area health authorities and government departments. The group membership displays a wealth of expertise and experience in energy utilisation.

Energy managers can see four important roles that a corporate group can fulfil, but the individual can not: these have been adopted as the objectives of each group:

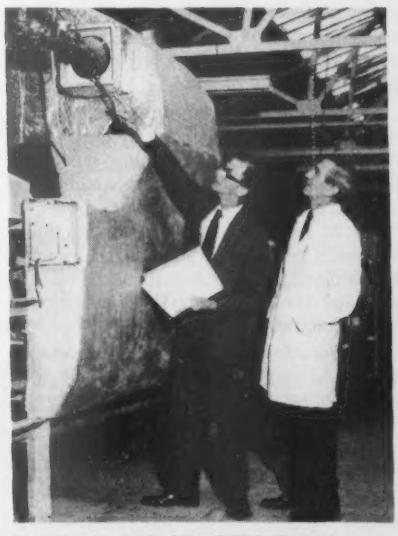
- ☐ To provide a forum for the interchange of experience to produce financial savings within industry from the techniques of energy saving
- ☐ To help energy managers and engineers identify opportunities for energy saving by drawing from the experience and achievements of others
- ☐ To encourage the practical evaluation and

Work conditions improved

During a follow-up visit by the British Ceramic Research Association to a Wedgwood Group tableware factory under the industrial energy thrift scheme it was found that a number of dryers had been insulated as recommended after the initial visit some 15 months earlier.

Drying of glazed ware was carried out in six dryers of round, belt and mangle types. These were gas-fired units and insulating of dryer structure, fan casings and recirculation ducting was carried out using aluminium painted fibrous plastic insulation, and 2 in thick fibreglass covered with aluminium-faced paper.

The cost of insulation was approximately £1,000 and energy-savings accruing were about £20 per week. Thus a payback period of one year was achieved. In addition to the energy savings, environmental conditions in the vicinity of the dryers were improved, especially during the summer months. No auxiliary space-heating was needed to replace the heat lost previously from the dryers.



Ron Cox (centre) of the British Ceramic Research Association discussing the insulation of a glazed-ware dryer with Bernard Coppinger, glazing manager of Wedgwood's Midwinter factory.

adoption of new energy savings techniques
□ To constitute an informed body of opinion which will represent at national level the views and experience of local industry and commerce on energy matters.

The declared intention of all members is to achieve these objectives without providing an opportunity for the commercial promotion of the products or services of any manufacturer or supplier though representatives from such organisations are invited to address group meetings on the understanding that any presentation will not be commercially biased.

Forty energy group meetings have now been held in the south-west and talks have been arranged on many technical aspects of energy conservation including combustion, waste heat recovery, energy audits and control systems. The twelfth meeting in the Bristol area was recently held on the premises of the Kleeneze Company when 37 members were presented with a talk on 'Cost reduction in lighting' by Osram – GEC. A small working party formed from group membership recently reported on the training needs of the energy manager. Recommendations made in the report have been adopted by the Department of Energy.

The south-west groups normally arrange their own programme with assistance provided by the regional energy conservation officer, Gerry Madden of the Department of Industry. He co-ordinates the activities of the four groups via quarterly chairmen and secretaries' meetings. Contact with other groups is provided by annual chairmen meetings and the national energy management conference.

There is clearly tremendous opportunity for energy saving in industry and commerce. In the south-west alone it is estimated that an overall saving of 10 per cent would provide a benefit by saving £92 million a year. In my company over the past 18 months a saving in energy costs in excess of £300,000 has been achieved. We are confident that savings in the future will be even greater as we have recently adopted an energy policy involving energy audits, target savings, training and capital investment. Contact and discussion with other group members has helped from the experience of others.

In addition, Barry Palmer the chairman of the Devon and Cornwall energy group and energy manager at ITT, Paignton, has had considerable success. His company has achieved a 30 per cent reduction in the amount of electricity consumed over a three year period. At the same time the factory was extended and production increased. Through his energy managers group Barry has helped others to achieve similar savings.

Considerable progress has been made in the last two years in energy conservation. Substantial savings have been and will be achieved. We must however, avoid developing a complacent attitude. I should like to take this opportunity to encourage the directors and senior managers in industry and commerce to support their energy managers and their local energy managers group. Believe me they have nothing to lose as experience in the south-west has shown that a worthwhile contribution to profitability and efficiency can be made from saving energy.

Bridging R&D and investment

The government attaches particular importance to demonstration projects as a means of promoting energy conservation in industry. As one of their functions, two units are assisting in this, the Department of Energy's Energy Technology Support Unit at Harwell (ETSU) and the National Engineering Laboratory's energy conservation section (NEL). Dr W. M. Currie, responsible for ETSU's conservation activities and chairman of the committee of officials and industrialists which coordinates the work of the two units and advises departments on the funding of demonstrations, explains that such projects are usually collaborative ventures between the energy user, the equipment supplier and government.

Nowadays, instead of talking about R&D it is fashionable to speak of RD&D. The second 'D' refers to 'demonstration'. A demonstration is a full scale trial of a product, process or method of operation to establish its performance under working conditions. The project has to be representative of a particular sector or range of applications so that the results can be readily interpreted and applied to other potential installations. The object is to promote investment in the technology.

The technology itself may be novel or it may only be the application which is novel. For example, commercially available equipment which is well established in one sector may have to be demonstrated in another sector where the operating conditions are different and reliability uncertain. In either case optimisation and de-bugging will be required to establish a good match between the technology and its application.

Thus, demonstrations can provide a bridge between R&D and industrial investment. In the energy conservation field the government attaches particular importance to demonstration projects (table 1). This is because there is a great deal of existing technology which, due to the recent rises in energy prices, could be applied cost effectively on a much wider scale than at present. The government programme aims to facilitate this by providing financial support for demonstrations plus independent technical and economic evaluation.

Top priority is being given to waste heat recovery. This technology is already used widely but ETSU has estimated that 6 to 8 million tonnes coal equivalent of additional energy could be recovered for process use and space heating in industry. Some of this simply requires investment, but some of it is inhibited because of doubts over payback times, maintenance costs, reliability etc, and some of it requires improved or modified equipment. There is also a need to establish which types of equipment are best suited to particular environments.

Because of this the first phase of the government's scheme, for which £1.5 million was announced in September 1977, has been largely concerned with feasibility studies and development work. Twenty projects have been funded. These are mostly with industrial research associations and many of them are concerned with matching or adapting available equipment to promising areas of application.

For example, three of the projects involve heat pipes. A heat pipe is a device which can

Table 1 **Role of RD&D in facilitating more widespread penetration of energy conservation technology**

Sector or area of application	Existing technology	Improved or extended technology	New technology
Familiar	*Investment* 1	*Development and Demonstration* 3	*R&D leading to Demonstration* 5
New	*Demonstration* 2	*Development leading to Demonstration* 4	*R&D* 6

The matrix shows how existing, improved or new technology can be exploited in either familiar or new areas of application.

Also shown is the activity which government may need to support to bring about the exploitation, or wider exploitation, of the technology in each case.

The numbers denote the degree of emphasis that government should give to supporting each activity.

transfer heat a short distance between two process streams. It is particularly suitable where cross contamination has to be avoided. The first project is with the British Food Manufacturing Research Association (BFMIRA), and is to study the acceptability of heat pipes under hygienic conditions. T. Lucas and Co Ltd are co-operating with BFMIRA to assess the energy savings from a heat pipe already fitted to a spray drier.

The second is with British Non-Ferrous Metals Technology Centre to extract waste heat from different sources and distribute it for a variety of uses in the factory using microprocessor control. Discussions are taking place with companies in the copper industry with a view to installing the first micropressor controlled system during 1979.

The third is with the Atomic Energy Research Establishment, Harwell, in association with IRD Ltd and partly funded by the EEC. It is to develop higher efficiency heat pipes which will be cost effective in areas where there is little heat recovery at present. Host sites have been evaluated in six different industry sectors and discussions are also taking place with potential manufacturers.

£20m programme

The second phase of the government programme started in April 1978 with £20 million available over four years. Throughout 1978, ETSU staff – and more recently NEL staff – have been working up proposals directly with industry. A typical project involves the user of the equipment or process; the manufacturer or supplier; an independent monitoring agent; and the government.

Since it is the user who has most at risk and who must be satisfied in the end, government assistance is aimed primarily at him. However, since the user may have little interest in the national savings which the government hopes to promote through the demonstration, the preparation of the proposal is usually a collaborative effort, with ETSU/NEL acting for the government.

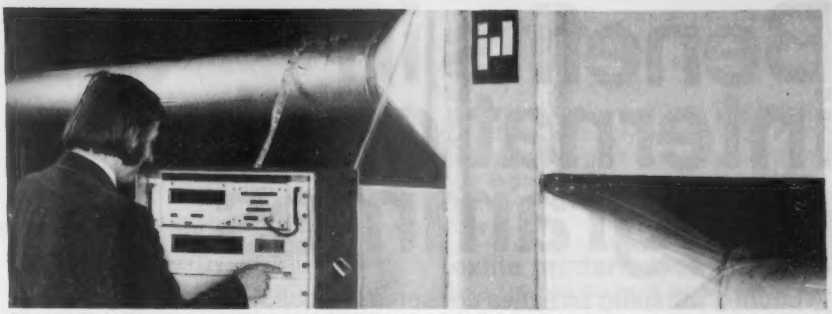
The manufacturer may also have to play an active part, particularly where equipment is novel or has to be modified. Also, the manufacturer and the government have a common interest in evaluating markets and ensuring adequate capacity to meet demand.

Finally, performance and energy savings have to be evaluated by an independent but technically competent organisation which is acceptable to the other parties.

High temperature heat wheel

Several full scale projects have now been approved. The first one to get the go-ahead illustrates the sort of collaboration that is being sought. It is with Alcoa Manufacturing (GB) Ltd to recover heat from three aluminium melting furnaces through a single high temperature heat wheel to be made by James Howden and Co Ltd. Monitoring will be by National Industrial Fuel Efficiency Service Ltd.

Howden and Alcoa are both investing in the project. Howden have also had financial support from the EEC to develop the heat wheel and Alcoa will get a demonstration grant from the Department of Industry towards the installation, which will be the first of its kind in the UK. If the project is successful the fuel savings could be worth £170,000 per annum in this application. Similar applications are believed to be possible not only in the aluminium industry but also in the steel industry, with a potential national savings of 0.15 million tonnes coal equivalent. The two companies will collaborate on the design of the heat wheel, on a materials testing programme and on in-plant testing once the wheel is operational.



Air to air heat-pipe heat exchanger on test at International Research and Development Co.

Factory heat loss detected from the air

The first commercially available aerial survey to locate heat loss from industrial buildings is shortly to be launched in the UK and Eire by Fairey Surveys Ltd. The reduction in energy loss from buildings, made without any reduction in comfort levels, could make a major impact on our fuel bills, both nationally and in individual organisations. Aerial infra-red surveys give a means of obtaining quickly a detailed overview of groups of buildings.

Organisations taking advantage of this service will be able to determine the precise areas of heat loss, whether through a badly insulated roof, fractured pipe or even an underground leak.

The aerial surveys will involve the use of a specially developed multispectral scanner taking thermal photographs of various locations throughout the British Isles. The client will receive a set of the photographs at a scale of about 1/1250 which will clearly indicate the areas of excessive heat loss as bright white spots or patches. Together with the pictures will be an interpretation report on any heat loss anomalies.

Commencing in the near future, the timing of this operation is particularly important as it will give the client ample time to identify the specific areas of loss and take steps to remedy them before the winter sets in and the cost of heating soars.

The technique is of course not new. An exercise last April involved a series of survey flights, organised by the Image Analysis and Remote Sensing Group, Harwell, and supported by the Department of Energy.

First, it sought as an R&D exercise to supplement simple pictorial representation of heat emission with detailed quantitative data on heat loss, and to assess how image analysis and data handling techniques could aid this, and to find how such data could help the energy manager.

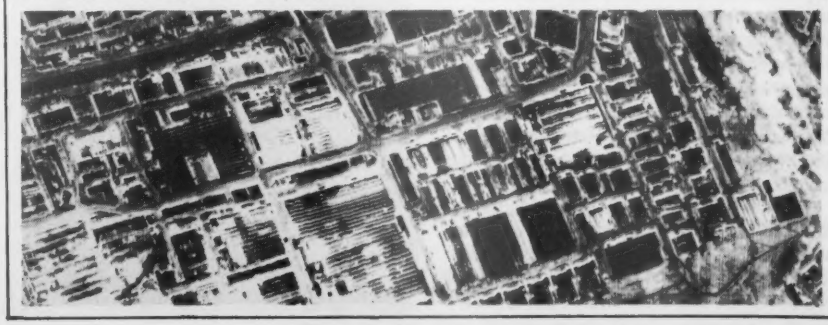
Secondly, it sought to reveal and identify the logistical problems involved in organising a nationwide overflight programme, supported with necessary ground observations, on a multi-client basis.

Essentially thermography involves the measurement of infra-red radiation (within certain wave bands) emitted from the surfaces of buildings by means of semiconductor detectors. Such detectors convert the amount of radiation received from the surfaces into electrical signals which are then stored on magnetic tape.

Subsequently the information can be retrieved and the output presented, in either the form of a picture – giving an immediate qualitative assessment of radiation emitted, or in the form of numbers – giving a quantitative evaluation.

The numerical data, together with knowledge of the emissivities of the surfaces involved and local air temperature and velocities, allow the temperatures of the emitting surfaces and the total heat losses – including losses by convection to the surrounding air – to be calculated.

This Fairey Survey's aerial photograph, taken at night using a multispectral scanner, shows the areas of excessive heat loss as white patches.



Benefits in international programmes

'A country pursuing an active conservation policy in isolation may be able to make only a limited impact on world supply and demand for energy, but the benefit can become substantial if a number of other countries are simultaneously producing similar policies. The United Kingdom therefore welcomes the effort being made, particularly by the members of the International Energy Agency and the European community to implement internationally agreed energy conservation programmes' – green paper on energy policy.

The UK is playing its full part in international fora, mainly in conjunction with the European community and the International Energy Agency although the United Nations' Economic Commission for Europe and other international bodies also have an interest in the issues. The number of bilateral discussions is increasing. These occur not only with Britain's partners within the international organisations but also with other countries interested in the UK experience in and approach to energy saving. Only recently, for example, Britain was invited to assist the Jamaican government in the field of energy conservation.

In the EEC, which instituted a programme for the rational use of energy in 1975, the UK is able to compare its ideas, tactics and policies with those of its community partners. Discussions are held at two levels: the commission and the council. The commission has four expert groups including one covering industry and another buildings to advise it on areas suitable for a community initiative. Once the commission has formally submitted a proposal to the council of ministers discussion takes place in a council working group. With increasing importance being attached to energy conservation a special high level energy conservation committee has been formed to maintain the impetus of energy saving in the community and to provide a political steer to community activities in this field.

Within the community the UK has endeavoured to encourage a greater degree of selectivity in areas chosen for examination by the council working groups and has suggested that each group's activities should be based on agreement on priority areas; in-depth assessment of technical feasibility and cost-effectiveness of potential commission proposals; the identification of a clear community dimension in any proposals; and a greater emphasis on the exchange of information and experience between member states on effective conservation initiatives. The attention of these groups is presently focused on a range of subjects.

One such subject is vehicle consumption standards, based on United Nations standard A70. The UK has already introduced a fuel consumption test and has been instrumental in seeking an improvement to the United Nations standard. The influence of taxation on car fuel consumption is also being looked at which will include the valuation of the national policies followed by member states.

A proposed framework directive on the provision of an energy efficiency label on electrical domestic appliances is being considered. The proposal is for an optional directive which would allow each member state to introduce an energy labelling scheme but will effectively prevent the use of energy labels which do not conform to the provisions of the framework directive or the series of specific directives for various types of appliance.

The adoption of standard measures of consumption is an important aspect. Studies of insulation materials and techniques for measuring energy consumption of buildings, the implementation of the first energy saving directive on heat generators and a proposal for the modernisation of existing buildings are aspects being discussed in the building sector. Other industrial groups are looking at energy savings in the iron and steel, non-ferrous materials, textile finishing and the heavy clay industries.

ICI at Wilton has saved over 11 per cent on their heavy goods vehicle running costs using this Dynair clutch which ensures that the fan operates only at optimum engine temperature. Other users have achieved, on average, 20 per cent fuel reductions with a pay back period of between four and six months.

Widest spectrum

The International Energy Agency, set up in 1974, is concerned with energy issues over the widest spectrum. It has a special group looking at various aspects of energy conservation and it focuses its attention on possible lines of action, the development of common projects and analyses of energy demand of the member states. The group is supported by a number of expert groups dealing with industry, transport, buildings, district heating and public information and motivation, with members drawn from academic and business communities as well as from government administrations.

In the industry sector, the agency's attention has been focused on fiscal and financial incentives, reporting and auditing and information, education and motivation. Many countries are now running grant, subsidy or loan schemes and some have introduced tax incentives. In the field of energy audit the Canadian national energy bus programme, which uses computer equipped buses to carry out energy audits and give on-site advice to industrial establishments, has generated a great deal of interest, as have the UK's industrial energy thrift and energy audit schemes. All member countries of the agency are engaged in advice services and/or publicity campaigns to stimulate an awareness of the energy situation.

Attention has been given to the total fuel consumption for transport and the major constraints to energy conservation in the transport sector – for example, financial, legal, administrative and behaviour and land use pattern. The lack of general public awareness of the energy problem in this sector has also been identified as a serious problem. Attention has also been paid to speed limits although, in practice, the magnitude of the savings is difficult to quantify. All International Energy Agency countries adopted strict speed limits for energy saving because of the energy crisis but, in general, these limits have recently been relaxed to more publicly acceptable levels.

Reaping the rewards

Many firms across a wide spectrum of industry and commerce are now reaping the rewards of money invested in energy saving measures. In a significant number of instances there have been added benefits from improvements in productive efficiency and working conditions. The examples appearing elsewhere in this report and on the following pages have been provided by *Energy Management,* the Department of Energy's newspaper, and some of the industrial research associations who are collaborating in the industrial energy thrift scheme of the Department of Industry.

Hot air cuts warehouse heating costs

A remarkable 30 per cent cut in warehouse heating costs has been demonstrated by Argos, Europe's biggest catalogue showroom organisation. A natural gas-fired, high temperature, high-velocity system, developed jointly by Casaire of Harrow and the National Research and Development Corporation is responsible for this noteworthy achievement.

Latest quarterly figures released in early January by the company, show that the cost of fuel for heating its 12.5 million cubic feet warehouse at Daventry using this system, was two-thirds of that for an adjacent building of similar design and construction but using a conventional gas-fired, hot water system.

The Casaire system blows hot air – directly heated by natural gas and thus achieving a net thermal efficiency of 100 per cent – throughout the building. The whole area can be heated within 20 minutes and this almost instant control means that the system needs to be switched on only when required. The conventional system in the neighbouring building has to be kept in operation 24 hours a day, seven days a week since it would take too long to reheat the building once it cooled down.

Another energy saving feature is the use of specially designed venturi diffusers fitted to the high level ducting. These serve two purposes. First, to distribute the heated air uniformly throughout the building. Secondly, to use the high velocity discharge to entrain a large proportion of previously warmed air and subsequently direct the mixture downwards. This tends to reduce vertical temperature gradients. In fact, in the Argos building, from floor to roof level – 35 ft – the temperature gradient was found to be only 3°C.

Control over temperature is effected by modulating the burner flame using room mounted thermostats. The burner is designed to be turned down by a factor of 25:1 and a stable and clean combustion over the whole range is claimed.

The system requires very little maintenance, since there are no moving parts – fans, pumps, valves, dampers and so on – apart from the main circulation fans. Maintenance costs are insignificant – £300 a year compared to £5,000 a year.

Casaire would have expected the fuel savings to be considerably higher. But the Argos building has a higher level of utilisation and there is provision for a warm air infiltration curtain over the extensive roller shutting doors.

A section of the vast Argos warehouse at Daventry showing a 600-foot run of heating ducting.

Textile printer saves £4,700

Some 580 000 Btu/hr of waste heat – valued at £4,700 a year – is recovered from an Artos textile stenter, located at Walsden Printing Ltd, Todmorden, Lancashire.

The heat recovery exchanger system, designed by Airaqua Ltd of Wilmslow, was commissioned in April 1978. The cost of the installed system was £9,000. Waste heat from the stenter – which produces printed tablecloths, teatowels etc – is used to provide hot water for the washing part of the process. When process hot water is not required, the hot water is used to preheat boiler feed water.

An important consideration of the design of heat exchangers for use in hot gas streams which carry a solid burden is the risk of blockage. In application, for example, in the textile industry where the hot stream may contain quantities of textile fibres, or in the brick industry – where quantities of tile and brick dust are present in kiln exhausts – it is extremely important to design the heat exchanger to resist solid blockage.

Waste mine gas made a Crosfield asset

Over 9.5 million therms a year of waste methane gas from a coal mine is to be supplied to Joseph Crosfield and Sons Ltd, of Warrington, Lancs. The deal, between the company and the National Coal Board's western area, will result in savings in energy costs to Crosfield worth an estimated £150,000 a year and marks a further stride in the company's determined and successful drive to reduce its energy bill.

The project – the largest of its type in Britain – involves the piping of gas, through an underground pipeline, from Parkside Colliery at Newton-le-Willows to the Warrington site – a distance of some six miles. Laying the pipeline and installing the ancillary equipment will cost the Coal Board over £3 million and will take 18 months to complete. The contract, which will be profitable to both sides, is for an average yearly supply of 9.5 million therms of gas (equivalent to 40 000 tonnes of coal) for an initial 10-year period.

Describing the harnessing of waste mine gas as 'turning a hazard into an asset', Ray Hunter, NCB western area director said: 'The Parkside scheme is by far the biggest gas contract. We are hopeful that the supply can eventually be raised to about 15 million therms a year particularly if gas can be included from the neighbouring Bold Colliery.

'The scheme will benefit Parkside and its workforce by increasing its viability. It will also help the national drive for more energy conservation.'

An NCB spokesman said that the board had pioneered the tapping of methane gas from mines and supplying it on a commercial basis. Already some 12½ million therms a year

of gas were being supplied to industry. Another 20 million therms were available, for sale, mainly in the north and north-west of England with some isolated sources in Scotland and Wales.

At its 62-acre site in Warrington, Crosfield, a member of the Unilever Group, uses some 30 million therms of energy a year for steam raising, heating and manufacturing processes.

Crosfield, over the past two years, has carried out a remarkably successful energy saving programme which, so far, has lopped 18 per cent off its £4 million a year bill for gas, oil and electricity. By the end of the third year the company expect to reach its target of 25 per cent reduction in energy use.

Spearheading the attack on energy waste is the energy reduction group (ERG), set up in 1976.

ERG comprises senior management personnel with the company chairman as chairman of the committee. Crosfield appointed a full-time energy manager with a specific brief for identifying energy saving schemes. So far Crosfield has ploughed £1.5 million into energy saving projects. Three key areas, involving substantial investment, are: centralisation of compressed air supplies; new forms of drying; and improvements to furnaces.

Crosfield uses large quantities of dry, oil free, compressed air, and at pressure up to 100 psi. This compressed air was formerly provided by a total of over 60 air compressors of miscellaneous sizes and ages located in various parts of the site. Crosfield also uses large quantities of steam at two pressures, 200 psi and 80 psi; and all steam is generated at 200 psi. Items of plant requiring steam at 80 psi only, were provided with pressure reducing valves – thus wasting energy.

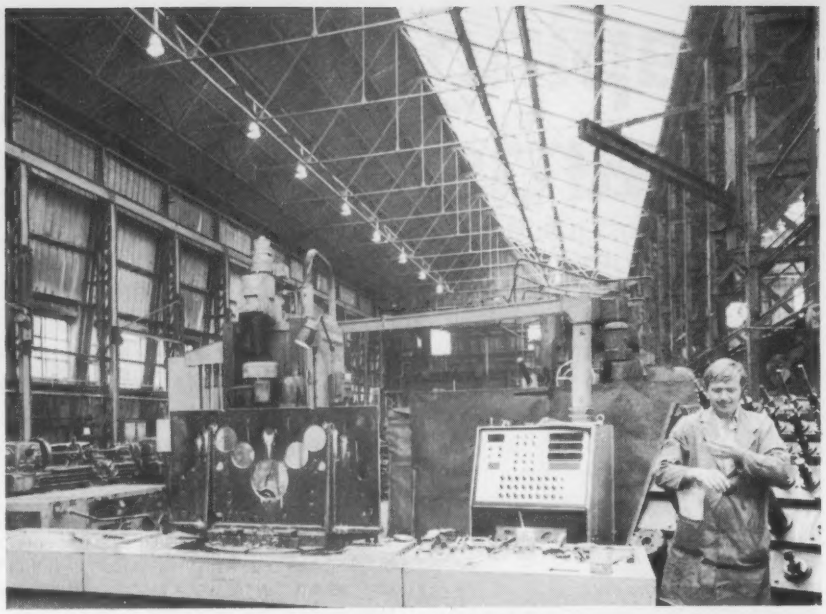
First, the company installed an independent low pressure (80 psi) steam main to all plants, in addition to the existing 200 psi main. Secondly, Crosfield installed a central compressor station using back pressure steam turbines as prime movers, steam entering at the boiler pressure of 200 psi and exhausting at 80 psi to the new low pressure main. Finally, all old air compressors and reducing valves were removed, and the cooling water from the new compressor station was fed directly to the boiler's feed tank, with resulting savings in water and heat.

The combined output of the turbines is 900 hp and replaces the electric motors formerly driving air compressors. Results: power savings; water savings; maintenance cost savings. In fact, the company now regards compressed air as being virtually free, since its provision now costs nothing in terms of energy.

Engineers seek expert advice

Better lighting is saving money for Stothert and Pitt, a Bath engineering company. It is so impressed by the success of its own efforts it has decided to use the Department of Energy's energy survey scheme to get further expert advice. Already, the company is saving, in lighting, £1,300 a year. Eventually total savings could be worth £20,000 a year.

The company initially spent £7,500 improving the lighting in parts of its machine shop.



Improved lighting arrangement in Stothert Pitt machine tool shop.

Energy savings were 88 per cent in one engineering bay, 58 per cent in another. At the same time the lighting has been improved by 144 per cent. Similar lighting improvements have been carried out elsewhere in the company's factories and head office.

'Lighting savings over a full year we estimate, will be worth about £20,000' said Mr Welsby, head of facility planning for Stothert and Pitt. 'There will be extra benefits in the form of reduced maintenance and replacement costs. Improved output and quality will follow. The scheme so far has resulted in considerable operator satisfaction.'

Because of the success of the scheme, the company is calling in an energy consultant under the government's energy survey scheme. Through this scheme up to £75 of the consultant's fee is recoverable from the Department of Energy.

'If we make such impressive initial savings through our own efforts there must be considerable potential for even greater savings with the help of an expert' said the company's managing director Dr W. H. Darlington.

Stothert and Pitt operate a system of area management and union committees which deal with items such as safety, energy conservation and many other activities. The company employs about 2000. 'Energy conservation is a priority item for each of our 10 committees from which we get valuable imputs from shop floor and management alike' points out Mr Welsby.

In addition to savings in electricity the company has looked at heating. Oil-fired space heaters – some 20 years old – have been replaced by either gas-fired warm air systems of radiant heaters in assembly shops, a machine shop, fitting, electrical and hydraulic areas, and building insulation has been improved. The result is a heat saving of some 30 per cent.

The company's capital investment programme has also resulted in major power savings through the introduction of modern machine tools. Other steps to save power include improved methods of electrode storage and control, and a wider use of continuous welding.

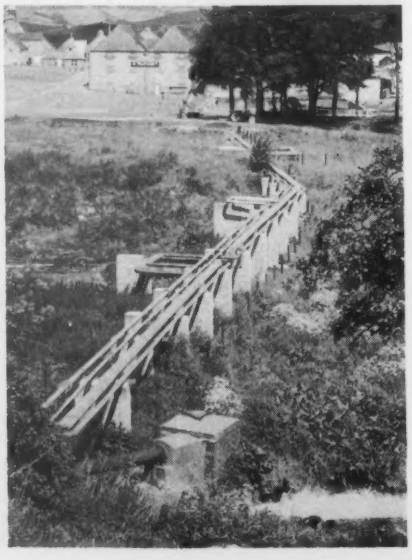
In the foundry, two large baking ovens have been removed as the result of introducing carbon dioxide, resin-bonded and sand enrichment processes. This has virtually eliminated the need to bake moulds and cores, thus considerably reducing coke consumption. The company estimates it has reduced gas consumption by 25 per cent in this way.

Waste heat recovered from whisky stills

In 1975, William Grant and Sons Ltd anticipated the continuing rise in energy costs and engaged Integrated Energy Systems to survey both Glenfiddich distillery and the adjoining Balvenie distillery and report on the potential for energy savings.

This survey highlighted the value of recov-

Part of the 700 m pipeline transporting steam, raised by waste heat, from Glenfiddich to Balvenie.



ering waste heat from whisky stills which are fired by coal and by butane. The first step was to install, in 1976, a waste heat boiler to recover the heat from the coal fired stills. This produced an average 4500 lbs/hr of steam at 150 psig which was backed up by the output from the existing oil-fired boiler, rated at 20 000 lbs/hr, as and when required.

Early in 1977 William Grant decided to install a second waste heat boiler to be run from the exhausts of the butane fired whisky stills. It was recognised that the combined outputs of this boiler and the existing waste heat boiler would produce, on average, more steam than required by Glenfiddich distillery and the decision was taken to pipe this steam to the neighbouring Balvenie distillery, a distance of 700 m. The average steam sent to Balvenie is 15 000 lbs/hr.

Steam is used at Glenfiddich for:heating mashing water; cleaning mashing vessels and pipelines; cooperage (shaping timber for barrel making); space heating in the bottling hall and cask shed; and at Balvenie, for: directly heating some of the stills; heating mashing water; and cleaning mashing vessels and pipelines.

Initial design showed that this pipeline must transport waste heat steam to Balvenie from Glenfiddich and also be capable of bringing steam from Balvenie to Glenfiddich at certain points of the production cycle.

This was achieved with loop and non-return valves. The steam flow in both directions being metered to provide accurate fuel costings for both distilleries.

Heat is recovered from two main flues by pulling the hot gases at 350 °C through extended surface water tube heat exchangers by induced draught fans. Pressurised hot water is circulated through the heat exchangers from a remote steam drum positioned in the boiler house some 20 m away.

The advantages of the system are that no civil engineering work was necessary, intrusion on the stillhouse is minimal and the hot gas ductwork is short. Additionally, using an extended surface heat exchanger allows feed water to be preheated so achieving optimum heat recovery. The output of the waste heat boiler is cyclic, depending on the distillation process, and in practice averages some 2500 lbs/hr.

The entire project was completed in time to allow the distillery to restart as planned and to meet the annual production requirements.

The total output of steam from the two waste heat recovery boilers is 7000 lbs/hr. In addition the use of induced draught fans with damper controls has given more stable furnace conditions and has resulted in savings up to 15 per cent saving in coal consumption and a 3 per cent saving in butane consumption.

The installation of the link-up pipeline has enabled the oil-fired boiler plant at Glenfiddich to be completely shut down, resulting in further electrical and fuel oil heating savings.

Operational experience over the first four months of this year show that fuel savings worth £180,000 a year are being made. The capital investment to achieve this was £230,000.

Encouraged by the success of its investment, William Grant are now actively investigating further ways of cutting energy costs. Measures under consideration include: installing more insulation; reducing steam usage; building a waste product incinerator, generating electricity from surplus steam, and further using heat in the gases emitted by waste heat boiler outlets.

PVC curtain halves heating bill

BYC Rollmakers Ltd and Lancashire Tube Stockholders Ltd oil fuel consumption exceeded 112 000 gallons for the seven months up to April 1977 and half of that was being wasted. The two firms shared a large open plan site at Oldham but each had different heating requirements.

To reduce this waste the firms invested in a pvc curtain door which made a barrier through which people could pass but cut down temperature fluctuations. Total cost of the curtain was £5,000 and only took one week to install.

Between September 1977 and the beginning of April 1978, the heating system consumed only 55 445 gallons of fuel oil – a saving of 57 050 gallons or 51 per cent compared with the same period for the previous winter. At current industrial volume prices for fuel oil this represents a financial saving of £18,000.

Although BYC Rollmakers and Lancashire Tube Stockholders both have taken good housekeeping steps to reduce energy losses they agree that by far the greater part of the saving has been brought about by the pvc curtain.

'Up to the point when we faced the need to partition the factory, none of us had any experience of pvc curtain doors' said Mr R. Percy, joint managing director of BYC Rollmakers Ltd. 'It was only by chance that we heard of such a door and decided to investigate further. I'm glad we did, for a fixed partition in the factory would have been far more costly than the pvc curtain and would have left us far less flexible than we are with the curtain partition. We are more than satisfied with the pvc curtain and with the manufacturer and installers who worked together excellently to help us overcome our problems. The savings in fuel oil over one winter has already paid many times over for the total installation.

Output trebled with fuel saved

Critchley, Sharp and Tetlow's installation of a specially designed furnace plant at its Yorkshire factory has trebled output and led to fuel savings of more than 60 per cent. Other advantages are: quicker heating response; reduced maintenance and enhanced product quality.

In 1967, the company began producing stainless steel wire which involved developing bright annealing heat treatment processes. The plant used was a fairly conventional brick built furnace heated by 16 burners, eight each side, firing across the hearth in two zones.

Total gas rate was 13.8 therms per hour. The stainless steel wire being processed passed through 17 heat resisting steel tubes.

The original furnace for the bright annealing has been replaced by an updated design of furnace based on a prototype, twin deck, high velocity heated unit. The furnace heat treats 30 strands of stainless steel wire, raising their temperature to about 1050 °C. The wires pass through heat resisting alloy tubes ½ in in diameter which are arranged in two decks of 15 tubes, each on silicon carbide tiles, supported by the insulating brickwork.

The furnace is heated by ten high velocity jet burners along one side, each burner rated at one therm. Each burner is fed by premixed air and gas from an air blast inspirator and the air/gas ratio controlled by zero governor, is pressure loaded from the mixture tube.

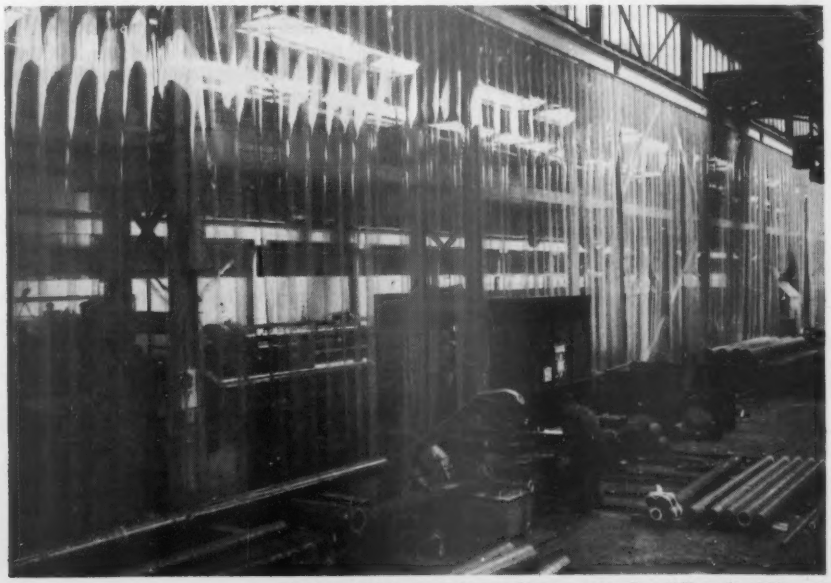
The advantages of the new design are that the mode of tube heating used is inherently much more efficient and flexible and at the same time permits a greater furnace loading.

Furnace performance improved

Barton Abrasives Ltd, has reduced fuel consumption by 36 per cent in its rotary batch furnaces at its Middlesbrough plant, and simultaneously increased furnace throughput by 69 per cent.

An inspection of the firm's seven rotary

The open plan factory partitioned by the PVC curtain.



batch heat treatment furnaces, for heating cast iron shot or grit, showed that the burners and controls had deteriorated seriously and the furnaces were inefficient as there was not enough air to provide complete combustion. In addition to this the furnace linings, were in a very poor condition. Gas consumption varied between 1000 and 2000 cu ft /hr from furnace to furnace, and the heating-up period also varied.

It was decided to modify one furnace on a trial basis, with existing burners, pipework and controls being completely replaced. The existing firing layout was retained, although the furnace was re-bricked, with new burners and quarls being fitted. Blaydon burners, designed and manufactured by Northern Gas Industrial Development Laboratory were chosen because of their low cost and excellent combustion characteristics. Eight burners were installed to give a total rating of 1 440 000 Btu/hr.

Over a two week period the gas consumption and the 'shot' throughput of the furnace were monitored by Barton Abrasives staff, and figures proved that the output in tons each 24 hours rose from 5.33 to 9.02. This was achieved by a drop in cycle time hours from 2.25 and 1.33, and gas consumption fell from 2940 cu ft to 1890 per ton, giving a fuel reduction of nearly 36 per cent. Reduced cycle time meant that the furnace capacity was increased by 69 per cent. The total potential gas saving on a 48 week year was projected to be over 28 000 therms.

Power station to supply industrial steam

A combined heat and power station – the first of its kind to be built by the electricity supply industry in the UK – is to be constructed at Moorfields in Hereford. The scheme, submitted by the Midlands Electricity Board, was approved by Energy Secretary, Tony Benn, towards the end of February. The project will take two years to complete and and is expected to cost about £3.5 million.

Waste heat produced in the generation of electricity will be converted into steam and hot water and supplied to H. P. Bulmers Ltd and Sun Valley Poultry Ltd.

An estimated 13 MW of thermal power will be obtained as a by-product of the generation of electricity, thus saving, in a year's operation, approximately 15 500 tonnes of fuel oil worth nearly £750,000. The thermal efficiency of the new station is estimated to be 76 per cent.

The scheme involves the installation of two 10 000 hp diesel engines each driving a 7.5 million watts generator. Heat in the engines' exhaust gases will be recovered by means of waste heat recovery boilers fitted to each engine. The exhaust gases will then pass through economisers.

Heat obtained from economisers will be used to further raise the temperature of the boiler feed water, already pre-heated by means of heat extracted from the engines' water jackets and lubricating oil cooler systems.

Four conventional oil-fired boilers will supplement steam provided by the engines when necessary. The station will be small and compact and all machinery will be effectively silenced.

There will be both national and local benefits from the scheme. Nationally there will be the benefit from savings in balance of payments to the improved utilisation of fuel oil. And locally the roads of Hereford will be less congested with heavy fuel tankers as all fuel is delivered to one central station by rail.

From an amenity point of view, several existing chimneys in the area will be dismantled when supplies of heat from the central station become available. In addition, the security of local electricity supplies will be improved since, in the event of a fault on the high voltage system, the generators would be able to run independently.

Carpet manufacturer benefits from heat wheel

A staggering, average 65 per cent cut in the energy used to dry carpet yarn has been demonstrated by S. Lyles and Co Ltd, manufacturers of high-quality carpet, at their Jilling Ing Mills, Dewsbury, Yorkshire.

Steam usage in a recently installed drier has been slashed, from manufacturers' design figures of 1.8 to 2.0 kg for each kilogram of water evaporated to 0.5 to 0.83 – saving between 58 per cent to 72 per cent in steam usage.

The saving in steam consumption work out at 42 500 kg a week, worth about £175 a week. Roughly half of these savings is attributable to the design of the drier, and the remainder to the 'heat wheel' installation.

The dryer is a large enclosure, in which air, heated by steam and blown by a large fan, is directed on to hanks of yarn as they pass through. The hanks are suspended on an overhead conveyor system. Internal recirculation of the hot air ensures that the maximum drying effect is achieved. Moisture-laden hot air is removed via a pair of vents. This is at a temperature of 95°C and formerly the heat it contained was wasted.

Now, the air is fed to a heat recovery wheel, housed in a cabinet adjacent to the drier. After passing through the wheel, the air is vented to atmosphere at about 30 to 35°C. Incoming air at ambient temperature is heated by the wheel to 85°C before going to the drier.

The heat recovery wheel is of a flattish section, and has given remarkably little trouble with fouling by airborne fibres. Some latent heat is recovered in its use, but the resultant condensate creates no difficulties either. The heat recovery installation, including custom-built ductwork and cabinet, and cold air inlet fan cost £8,000 which, it is estimated, will be paid back in two years.

Monitoring performance of S. Lyles and Co's heat wheel.

Over £8m saving for shippers

Around 80 per cent of the resistance to a ship's passage through water is caused by frictional drag on the hull. This resistance is significantly increased by the growth of marine organisms, or fouling. International Paint Ltd's Intersmooth SPC is an innovation in paint for ships' bottoms which is already making a major contribution to energy saving.

Over a two-year period, by reducing the frictional drag, SPC leads to fuel savings of around 12 per cent. Since product launch, there are now some 40 major shipping companies throughout the world enjoying the benefits. It is estimated that the annual fuel bill of the 80 or so vessels coated with SPC is about £70 million. During a two-year cycle the savings for these ships are calculated to be over £8 million.

SPC is completely different from traditional antifoulings. As a ship moves through water, SPC physically polishes to an ever-smoother surface. This process is the mechanism preventing fouling and leads to the smoothing of the ship's bottom and a decrease in frictional drag.

Geest Line, for example, operate its fleet between the UK and the West Indies on a critical schedule, a round trip in 21 days at 21 knots. When traditionally coated, the vessels had to be docked every 12 months using underwater scrubbing between dockings in

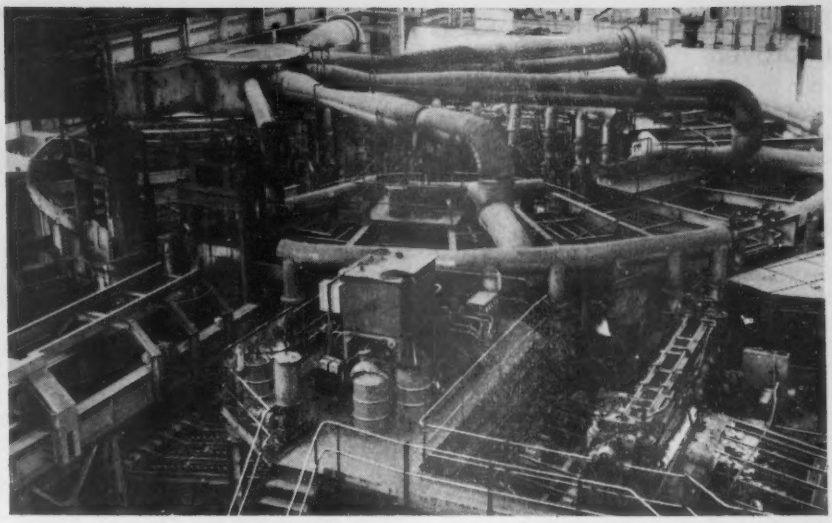
'Geestcrest' shows a smooth bottom after first in-service period with SPC.

an effort to maintain schedules.

With this sort of treatment the hulls quickly became rough and inefficient. One ship, the 'Geestland', had a hull roughness of 639 microns after only five years in service, compared with around 130 microns at newbuilding.

Geest Line first tried SPC on one of its fleet. Performance was monitored against the rest of the fleet. Based on the findings of substantial fuel savings, the whole fleet was docked for shotblasting and coating with SPC.

The 'Geestland', for example, now has a hull roughness of around 110 microns with a performance to match. The advantages are fuel savings of over 12 per cent in two years; schedules maintained as never before; in-service periods have been doubled, so halving drydocking costs; and underwater scrubbing is no longer needed.



The oil-fired rotary hearth furnace on which the performance study that led to substantial cost savings was carried out.

Cost of chiller recovered

A heat pump is being used to maintain plastic injection moulding output at the Hertfordshire factory of Revell (Great Britain) Ltd. Here, annually, many millions of kits, moulded in polystyrene on a range of injection moulding machines with capacities from 200 to 4500 kN, are produced.

This high production rate calls for a precise control of the operating conditions, particularly of the mould temperatures. This need has been met fully by the installation of an air-cooled chiller, supplied by the Churchill Instrument Co Ltd. The 22 kW chiller, operating as a heat pump, is the heart of a recirculating system which provides cooling water to all the machines. Closely controlling the water temperature at 0 °C, the system allows moulding cycle times to be shortened, thus increasing production rates, and minimises rejects. Furthermore, recirculating the cooling water in this way saves about £1,500 per annum in water supply and treatment costs.

About 108 MJ/hr at 0 °C are picked up by the cooling water as a result of cooling the moulds. This is extracted at the evaporator of the chiller and then recovered at the condenser which is air-cooled by two fans each handling 3.3 m^3/s. During the winter, the warm air is ducted to the 1850 m^2 moulding shop where it makes a significant contribution to its space heating.

Mr Whittome, Revell's works manager, now treats the chiller as an essential feature of the plant without which the company would not be able to meet the demand for its products. He confirms that the capital cost of £6,000 has been recovered in under a year as a result of the production benefits achieved and the savings made in water and energy costs.

Study saves furnace fuel

Substantial fuel savings on a furnace have been achieved following a detailed study of performance. The study was undertaken by the fuel engineering section of the TI Steel Tube Division's development engineering department on an oil-fired rotary hearth furnace used to preheat steel billets for tube making at TI Weldless Ltd's plant in the west Midlands. The work was initiated in order to explain seemingly trivial operating problems and to pave the way to improving efficiency.

The study, carried out in conjunction with TI Weldless' own engineers, revealed an unacceptable 'sting-out' from the furnace discharge door at high firing rates unless the by-pass damper of the convection type recuperator preheating the combustion air was raised slightly – indicative of abnormal draught loss.

Raising the damper allowed some of the waste gases to by-pass the recuperator thereby reducing available heat and lowering combustion air temperature by around 100°C. In turn, both furnace heating capacity and furnace economy were reduced.

Comprehensive surveys of the furnace and exhaust system failed to account fully for the excessive draught loss which was approximately twice that originaly expected. However, an obvious remedy was to install a fan to draw all the gases through the recuperator and thereby restore the outgoing combustion air to the specified temperature of 350 °C.

Since a fan for operation at over 500 °C would be very expensive, thought was given to cooling the gases and to utilising the recovered heat. A rough calculation indicated that cooling from 540 °C to 300 °C would generate sufficient steam to more than halve demand on the main boiler house.

So, for a total cost of £182,000, a waste heat boiler was installed in the recuperator outlet flue, and an induced draught fan powered by a 100 hp motor was fitted between the boiler and the stack.

Construction was started in July 1975 and estimated savings on fuel prices at that time were about £100,000 per annum, 80 per cent of this from steam generation and 20 per cent from restoring preheated combustion air temperature to its intended level.

Because of the success of the installation as a whole, and, in particular, much improved draught control, a similar scheme is currently being installed on another furnace at the same site and other furnaces in TI Steel Tube Division companies will be likewise investigated.

Plastic strips save heating bills

This plastic 'Stripdoor' installed at the Newcastle furniture warehouse of Fenwicks Ltd is claimed to save £150 a month in heating bills.

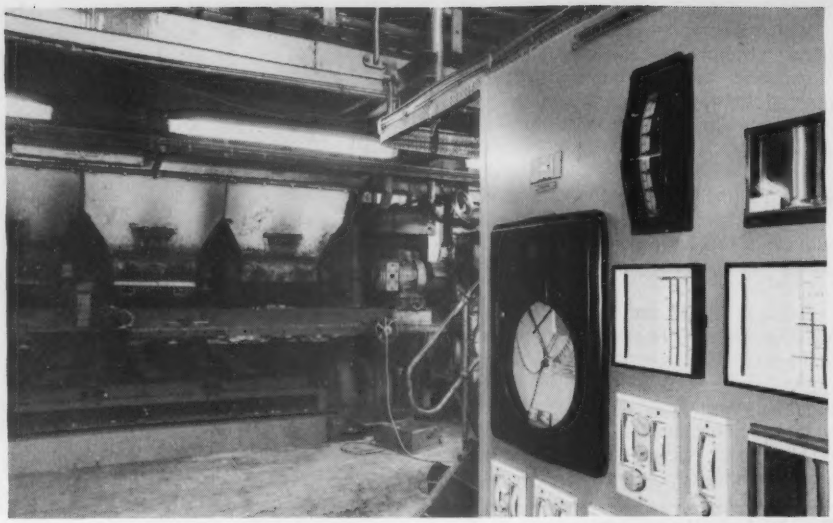
Power station efficiency improved

John Dickinson's Nash Mills, which makes industrial and speciality boards at Hemel Hempstead, has made notable progress in energy conservation in the last year or two.

Like many paper mills, it has its own power station both for raising process steam and generating some its power in parallel with the grid. The station is primarily coal fired, but had until recently used heavy oil as a supplementary fuel. By spending £130,000 on renewing a boiler grate, the efficiency of coal firing has been improved and it is now seldom necessary to burn oil. The mill is saving some £95,000 a year by using the cheaper of the two fuels. In addition, its unit cost of steam is now 5 per cent less than a year ago, although the coal is 12 per cent dearer.

On the other hand, the ability to burn oil as an alternative fuel in emergencies is still maintained. Both oil tanks have been well lagged for £5,300, but only one is kept heated. The overall steam saving is worth about £14,000 a year. Other improvements have been made in the power station: the latest is a zirconium type oxygen analyser now being installed to monitor the flue gases.

The more thrifty use of electrical power in the manufacturing processes is also being pursued. Additional capacitors have been installed for £4,600 to improve the power factor from 0.88 to 0.95 and save £2,500 a year in bought-in power. Operatives are also being encouraged to follow a load shedding procedure, which has been worked out for use in response to a maximum demand alarm system.



New instrumentation in Nash Mills boiler house.

Building monitoring saves energy

Dr John Cunningham seated at a building management system control console at Satchwell Control Systems Ltd, Slough. Malcolm Clapp, Satchwell's chief engineer, explained that it is a micro-computer based system using distributed intelligence techniques to continuously control and monitor all building functions. These functions can include heating, ventilating, air-conditioning, lifts, security, fire protection, lighting and overall electrical power management. One prominent company in Britain which is installing the system anticipated savings in the cost of the various forms of energy of over £362,000.

Recuperative burner halves fuel use

An energy saving programme at Vauxhall Motors' Ellesmere Port plant will save over half a million therms of gas a year. Although work is in progress in various parts of the plant, a specific project involving a change to a new design of burner and radiant tube heat exchanger has already achieved individual plant fuel savings of 56 per cent.

The project was concerned with the carburising furnaces which are a vital part of the plant's operation. These furnaces – by heating components in the appropriate carbon rich atmosphere at the specified temperature – provide the exceptional hardness which transmission, and other car components must have.

Vauxhall has 25 gas-fired radiant tube carburising furnaces of varying design. It was shown that a major improvement could be made to this whole class of furnaces when one was equipped with radiant tubes and burners based on a new design. Not only did this meet all the demands of the process, it provided a substantial saving in fuel and a number of incidental benefits.

Vauxhall has now decided to modify all its indirectly heated carburising furnaces to use the same firing system. The furnace chosen to start the programme was an indirectly heated tunnel through which a load is pushed on trays while being exposed to an accurately controlled heating cycle and a fan-circulated atmosphere of carburising gases. The major alteration was the replacement of existing burners and radiant tubes by single ended radiant recuperative burners and tubes.

One of the most important of the burner's features is that it gives good mixing under all flow conditions with a uniformly high rate of heat transfer to the radiant tube surface and eliminates carbon formation. Ignition is simplified by high tension spark. The flue outlet is integral with the burner and the entire assembly requires only a single hole in the furnace casing which provides ease of installation and replacement.

The burner incorporates a recuperator between the waste gas outlet and air inlet so that, after leaving the outer tube, further heat is given up from the hot gases to the incoming combustion air. It is this feature which provides most of the fuel saving compared to the original system.

Before modification the average annual rate of gas consumption was 115 000 therms on each furnace – this dropped after modification to 50 500 therms – an annual saving of 64 500 therms (56 per cent) on the original.

Additionally, the modifications eliminated the need for main furnace exhaust fans and provided electricity savings amounting to 71 000 kilowatts a year; the cost of reburnering the furnace was £1,300 less than a routine renewal with the original design of burner; and future cleaning, maintenance and renewal will bring a further reduction.

Dimpled process vessels boost production

Production boosted by 40 per cent and energy consumption cut by 25 per cent. That's the achievement of dye manufacturer Food Drug and Cosmetic Colours Ltd, of Sandy, Bedfordshire, through switching from one type of dye heat processing vessel to another.

Formerly, the vessels were made of stainless steel with a mild steel steam jacket. Now the complete assembly is of stainless steel, the jacket interspace is very much narrower and the surface of the stainless steel jacket is dimpled inwards. The centres of the dimples are all fully plug welded to the vessel.

The result is substantially improved heat transfer – leading to faster heating up and cooling down times. Because the dimpled structure is stronger than the former type, thinner metal can be used, again leading to improved heat transfer.

Chemplant Stainless Ltd, West Hyde, Rickmansworth, Hertfordshire, makers of the dimple jacketed vessel, has paid special attention to heat transfer. One of its developments, for which patents are pending, is the insertion of flow guides within the jacket interspace in order to force the heating/cooling media in a predetermined circumferential path. The flow guide, combined

with the turbulence set up at each dimple, boosts the rate of heat exchange.

Food Drug and Cosmetic Colours Ltd's managing director, Mr Phillip Givertz, explained: 'Our gas-fired steam boiler used to work flat out over former mild steel-jacketed vessels. Now it does not have to work so hard, because we are not using so much steam. Gas consumption in the first quarter of this year was 25 per cent lower than the first quarter of 1977 – and our production is up 40 per cent.

'Besides this financial advantage, we have observed that we also get better temperature control during processing. With the former plain jacketed vessels we had some 'run-on' in temperature in our product when we turned the steam off, now with the dimple jacketed vessels there is none.'

Insulation pays for itself

A £9,000-plus investment in insulation at three of the Hellermann Deutsch factories in East Grinstead, Sussex, has resulted in heating cost savings of £4,600 per annum and virtually paid for itself in two years.

The three factories in question produce electrical and electronic relays, connectors, fibre optic systems and cable harnesses. In all they total 23 275 sq ft. Between January 1976 and June 1977, they were fitted throughout with suspended ceilings and, in one case, with double glazing. The false ceilings not only provided insulation but also reduced the volume of air required to be heated.

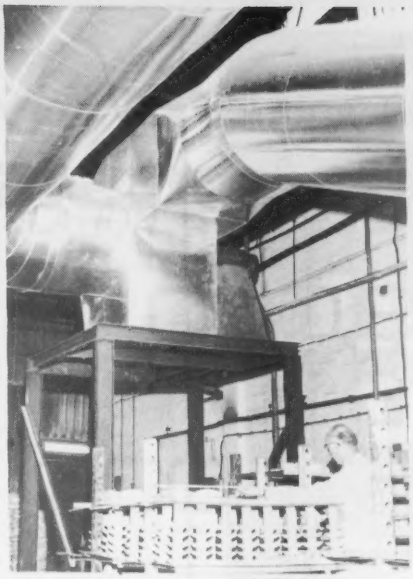
As a result, the two oil-fired and one gas-fired heating boilers involved have been operating at consistently lower levels. Overall output has been reduced by over 1 million Btu's/hr and created savings of around £4.20 per hour; approximately £440 per week during winter periods between 1 October and 1 May.

Estimated total savings are over £4,600 per winter and savings of this order and more will be made as fuel costs rise. By the end of this winter, the initial investment will be paid for out of reduction in fuel bills and from there on show continually increasing benefits.

Waste heat utilised at Doulton

Doulton Insulators Ltd, was first visited by the British Ceramic Research Association under the industrial energy thrift scheme in June 1976. Prior to this visit the company had appointed an energy manager and had made considerable savings. Since the visit further energy-saving schemes had been undertaken both as a result of the continuing energy-saving policy of the company and in response to the recommendations made in the thrift scheme visit report.

One recommendation was the utilisation of waste heat, in the form of hot air, from tunnel kilns for ware drying. At the time of the visit hot air from the cooling-zones of two tunnel kilns was being used for space heating for about 30 weeks per year and was being discharged to waste at other times. Following an instrumented survey, made by the research association in October 1976 the company decided to install a waste-heat utilisation scheme, costing approximately £30,000, to replace steam at two groups of dryers by hot air.



Insulated hot-air ducting from Doulton's tunnel kilns.

Hot air from the kilns was ducted over 200 m through insulated and aluminium-clad ducting of up to 1 m diameter. About 1.9 GJ/h of energy in the form of steam, 12 per cent of the site's steam demand, are expected to be saved. The estimated saving, after allowing for an alternative means of space heating, is about £22,000 per year.

Air curtain keeps in heat

With an ever-open door, Pandair Freight Ltd had the problem of maintaining satisfactory working conditions and levels of heat in their purpose built warehouse. Having already used air curtains in smaller warehouses, Pandair asked Brake Shear Ltd, of Barnet, Herts, a small company specialising in the manufacture of high pressure heated air barriers, to design a high pressure hot air barrier system to cover the proposed 70 ft by 15 ft of high loading bay door openings.

This air curtain protection was to be integrated with a fully automatic back-up system of heating to maintain the heat load in the new building.

It was decided to mount all heating appliances and the air curtains at high level thus avoiding using valuable floor space for barrier rails and heaters. With a heat load of approximately 5.75 million Btu, it was decided to use a system relying entirely on the continual operation of the air curtains whether the doors be open or closed, and the automatic operation of three roof hung space heaters strategically positioned within the warehouse.

Thus with the pressure of cold air penetrating via the freight doors arrested with two twin-jet 'Shearflow' air curtains, the space heaters could be left to operate fully automatically on demand of heat. The air curtains were constructed in sections and mounted from the roof trusses of the building on a steel platform.

These units enable freight loading doors to be left open for long periods, allowing complete vehicular access for lorries and forklifts.

It was estimated that without air curtain protection and with the doors open the additional heat required to raise the temperature of air at 30°F penetrating at an average of 4 mph could be an extra 50 therms per hour, and even with 15 per cent radiation and 10 to 15 per cent spillage with an air barrier, the overall saving per hour would be approximately £6.00. Thus a 24-hour shift at average winter temperature could cost an additional £144 per day without air curtain protection.

Lagging saves gas

Because of a product change in a tile works the former practice of both drying and firing in tunnel kilns became inadequate and separate tunnel dryers were installed.

Hot air from the indirect cooling systems of the kilns was ducted about 100 yd to the dryers, but in one 24 in diameter duct, running near to an outside wall, the temperature of the air dropped from 139 °C to 54 °C during its journey from a kiln to a dryer. To raise its temperature to over 100 °C before it entered the dryer it was necessary to heat it directly by means of a burner which consumed 3 tons of butane weekly.

After lagging the duct with a 1½ in thickness of mineral wool and covering with aluminium sheet the temperature only fell to 128°C. This allowed the burner to be turned off and 3 tons of butane to be saved weekly. The cost was recovered in a matter of weeks.

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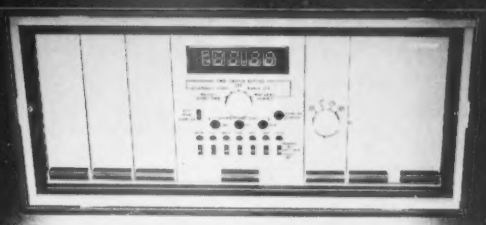

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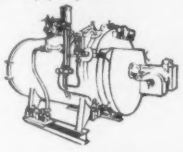

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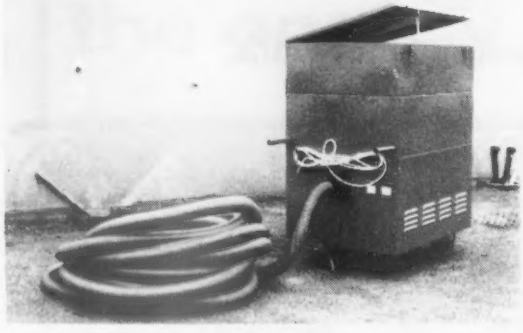

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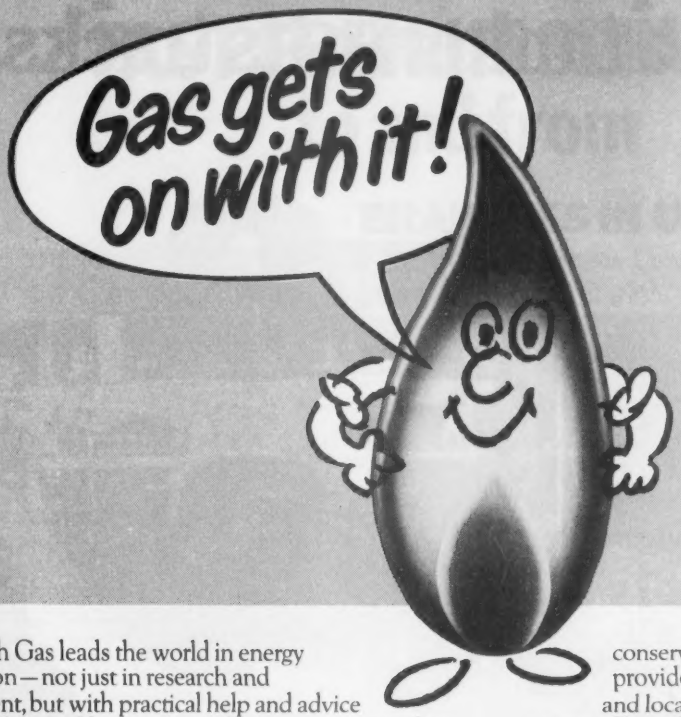

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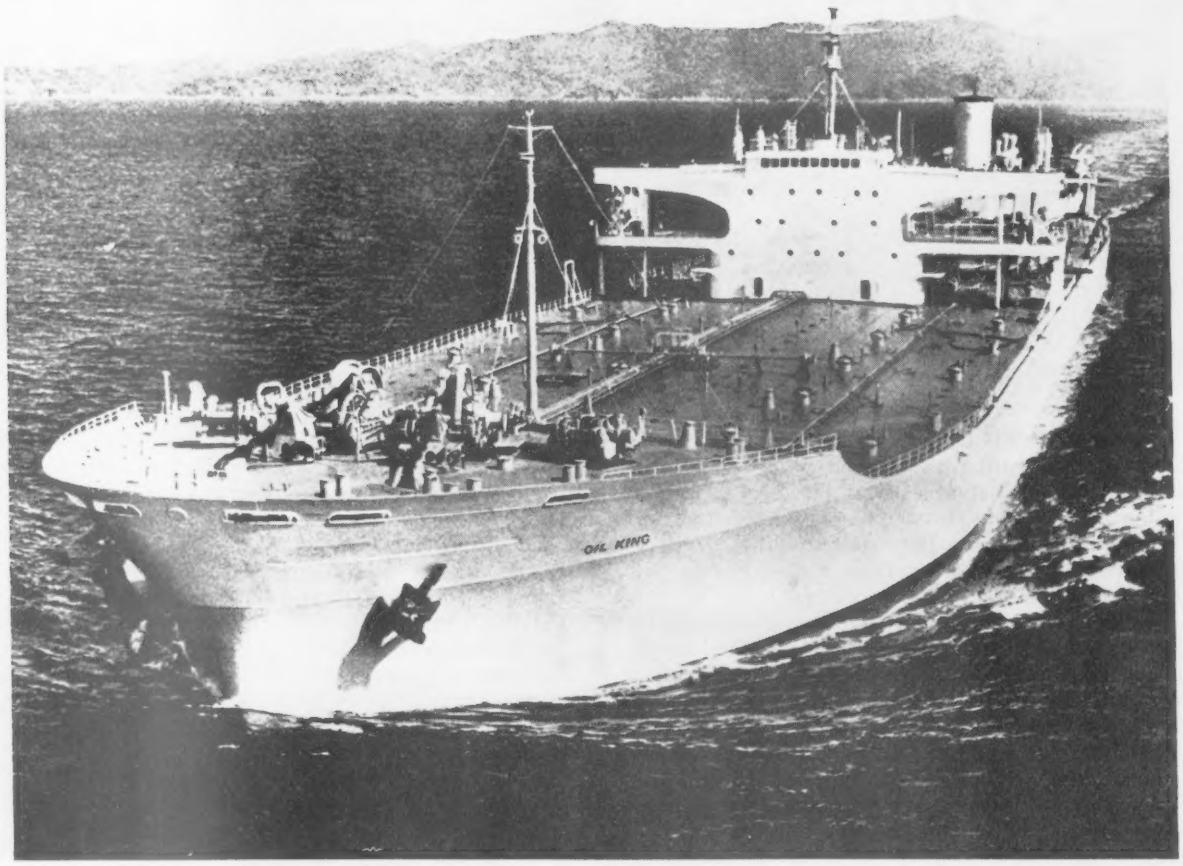

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Overseas trade exhibitions

Cruising to success at Annapolis

From G. R. Duff and J. M. Milne, British embassy, Washington

Thirty-three British firms exhibited at the ninth United States' sailboat show in a joint venture sponsored by the Ship and Boat Builders' National Federation (SBBNF) and the British Overseas Trade Board.

The show – held at Annapolis, Maryland, from 5 to 9 October – is one of the world's major 'in the water' boat shows and is generally regarded by the British leisure marine industry as the most important venue in the United States.

Some 350 exhibitors from all over the world took part in the show displaying a complete range of sailboats, instrumentation and accessories. The number of exhibitors showed an increase of almost 13 per cent over the figure for the 1977 show. Although final figures have not yet been produced the organisers are confident that the number of visitors, both from the trade and the public exceeded last year's figures of about 30 000.

The British were the largest foreign group of exhibitors at the show occupying more than 4700 sq ft on land plus 19 separate floating sites. Their integrated stands in the main tent compared very favourably with other areas in smartness, neatness and general overall appearance and drew favourable comment from both the trade and public.

Equally, the British display groups outside the tents were well turned out and also attracted favourable attention. In keeping with the general content of the show, the British group displayed the full range of products from complete ocean-going sailboats to inflatable craft and from engines to compasses.

Following what has now become a tradition a reception for the British exhibitors and their guests was held in the Columbus Club of Annapolis on the evening of the trade day. Co-hosts for this event were Mr F. R. Mingay, counsellor (commercial) at the embassy and Mr P. Sleap of the SBBNF. The attendance of over 300 people closely connected with all sectors of the sailboat industry proved yet again the value of a venue for informal introductions and discussions in a relaxed atmosphere.

Almost without exception British exhibitors reported making sales at the show and at least one received a 50 per cent increase on last year's volume which had been their best year to date. This was achieved in spite of the organisers' general view that this year, because of inflation, sales might be somewhat sluggish.

In addition there were a number of reports of agents being appointed and many valuable contacts made for future follow-up. A number of exhibitors expressed pleasure at the knowledge and real interest shown by many visitors emphasising the importance of this show and the benefits accruing to the British industry by the UK presence. UK exports of sailboats and parts to the United States in 1977 amounted to $9.9 million and the corresponding figure to the end of August this year was $8.4 million (figures at custom value).

Of the 33 British exhibitors at this year's show, a mixture of former and first time exhibitors, 32 stated that they would definitely return to Annapolis if there were a joint venture in 1979; the other was only just less than positive.

The demand for exhibition space continues to grow and now exceeds the capacity of the site. The Federal Republic of Germany who were showing for the first time this year were unable to obtain space in the main area and had to show its products in a nearby hotel.

We consider the US sailboat show will continue to be the premier show of its type in the United States. From the evidence above it is clear that there is an excellent market here for British products. But equally there are many ready to supplant us. Accordingly only a continued British presence will show Britain's determination and ability to remain a leading supplier to this market.

UK satisfied with IGB results

From G. Rogers, British consulate-general, Düsseldorf

The third international trade fair for industrial cleaning and works hygiene held in Düsseldorf from 11 to 14 October attracted 139 firms – an improvement over IGB 1976 with only 122 exhibitors.

The IGB is regarded as a highly specialised exhibition devoted to the latest in cleaning and hygiene technology. This industry certainly has a future considering that in Germany alone there are more than 1200 building cleaning companies employing over 200 000 people and achieving sales in excess of DM 2.5 milliard.

The UK provided the only foreign joint venture and the 10 firms, together with an information stand manned by exhibitors on the British Electrical and Allied Manufacturers Association, successfully provided a focus of attention.

The British joint venture, sponsored by Beama and supported by the British Overseas Trade Board and the British consulate-general in Düsseldorf displayed a wide range of carpet and upholstery cleaning machines, industrial floor cleaning machines and ancillary equipment, industrial cleaning accessories, floor care chemicals and polishers, dispensers, and waste compaction equipment.

Several firms who were looking for agents or distributors for their products were delighted because they received serious expressions of interest from potential importers and distributors which are expected to lead to encouraging business in west Germany and other European countries.

Satisfied

The exhibitors were satisfied with the trading results, an opinion shared by the other exhibitors at IGB. The fair authorities counted 7000 visitors, many coming from Benelux and Scandinavia. This was an improvement over 1976 when only 6000 trade visitors attended the fair and congress.

The Düsseldorf venue proved again an ideal alternative to other cleaning exhibitions in Europe and elsewhere, and the majority of British joint venture participants intend to come again in 1980.

Nursery equipment dominates autumn kids' fair

From British embassy, Bonn

Cologne's biannual international fair for children and young people held from 13 to 15 October continues to be a popular event for exhibitors. This autumn's UK exhibitors in the joint venture, sponsored by the City of Westminster Chamber of Commerce and the British Overseas Trade Board, were again well satisfied with business done and interest shown.

The main attraction for the British group was the international contingent which made up 29 per cent of the 9700 visitors. In recent years there has been a joint venture at this autumn event when the accent has been on furniture nursery equipment and prams. The Westminster chamber is now seeking support for the March fair when clothing dominates. It is hoped more firms will be attracted to Cologne to show young fashion.

There was a great deal of interest in British goods from German visitors who inquired about the London junior fashion fair which was to follow.

The main body of foreign exhibitors came from France and Italy who are well known in the German market.

They too must satisfy the German buyers requirements for DIN and TUV safety standards, for prompt delivery and for quality and design. Although this was an international fair Germany offers considerable potential for interested exporters willing to meet its market requirements.

In children's fashion at Cologne, natural colours and fine cord predominated. Because of the wet summer, manufacturers were pessimistic about results from the fair, but orders proved better than expected particularly for short-term winter season clothing.

For the first time at this fair, several publishers showed children's books. This is likely to be continued.

The next autumn fair for children and young people will be 13 to 15 October 1979.

Overseas trade country data

Australia

Products of the printing industry. A notice in *Trade and Industry*, 11 November 1977, announced that the Australian government had requested the Industries Assistance Commission (IAC) to inquire into and report on whether:

1 bounty of any other measure of assistance be accorded after 31 December 1978 the production in Australia of goods eligible for bounty under the Book Bounty Act 1969.

2 assistance should be accorded the production of other products of the printing industry of a kind falling within chapter 49 of the customs tariff.

The Australian government has now considered the recommendation of the IAC following which it has announced a reduction of duty on transfers (decalcomanias) (tariff item 49.08) and calendars (including calendar blocks) of paper or paperboard (tariff item 49.10) from 35 per cent to 25 per cent.

In respect of printed books, the IACs recommendation that bounty be continued has been accepted; the present level of assistance is one-third of the cost of production.

This will continue for books produced from 1 January 1980 to 31 December 1982, and will then be reduced to 30 per cent for books produced in the period 1 January 1983 to 31 December 1983. For books produced in the period 1 January 1984 to 31 December 1986, the rate of bounty will be 25 per cent of the cost of production.

Where materials for the production of bountiable books are supplied free of charge by a publisher to a manufacturer, bounty will be paid on those materials at 25, 23 and 20 per cent respectively of the price paid or payable by the publisher for the materials. A further review of assistance to book production will be carried out before the expiry of these measures.

Inquiries: CRE 01-215 5319.

Ref: CRE 868/77.

Further information

In many cases further information on the notices published on these pages is available to British exporters from the Department of Trade. The main branches concerned are: Commercial Relations and Exports (CRE) Divisions, 1 Victoria Street, London SW1H 0ET (tel: direct dialling); and Overseas Tariffs and Regulations Section (OTAR), Export Data Branch, Export Services and Promotions Division, Export House, 50 Ludgate Hill, London EC4M 7HU, tel. 01-248 5757. In each case, the relevant information source is indicated at the end of the notice by its initials (OTAR or CRE) and, in the case of OTAR, the telephone extension.

Bed sheeting bounty. A notice in *Trade and Industry*, 7 July, reported that the Industries Assistance Commission (IAC) had arranged a hearing into an application for the extension of the Bed Sheeting Bounty Act 1977 to embrace certain printed bed sheeting.

The Australian government has now considered the IAC recommendation following which it has announced that bounty will be extended to include bed sheeting which is woven and printed in one establishment but which is made up within Australia into bed linen outside that establishment.

Hitherto the payment of the bounty was restricted to manufacturers who carried out the processes of weaving, printing and making-up of polyester/cotton bed sheeting into bed linen in the same manufacturing establishment.

Inquiries: CRE 01-215 5319.

Ref: CRE 1054/78.

Cheese. A notice in *Trade and Industry*, 7 July, reported the date of the public hearing into the question of assistance for the production of cheese in Australia.

The Industries Assistance Commission has now released a draft of its report which has been made available to give interested parties an opportunity to examine and comment on it before recommendations are made to the government.

In order to receive submissions on the draft, the commission will hold a further public hearing in Canberra at the Public Inquiry Room, Industries Assistance Commission, 570 Bourke St, starting at 10.00 hours, Tuesday, 15 November 1978.

Copies of the draft report have been forwarded to all witnesses who gave evidence at the previous hearing. Other interested persons may obtain a copy on request from the Secretary, Industrial Assistance Commission, PO Box 80, Canberra, ACT 2600. Alternatively a copy may be obtained on loan from the Department of Trade, Room 336, 1 Victoria Street, London SW1H 0ET.

Inquiries: CRE 01-215 5319.

Ref: CRE 1056/78.

Ship repair. The Industries Assistance Commission has released a draft of its report on its inquiry into commercial ship repair. This draft has been released to give interested parties an opportunity to examine and comment on it before recommendations are submitted to the government.

In order to receive submissions on the draft, the commission will hold a further public hearing in the Public Inquiry Room, Industries Assistance Commission, King's Avenue, Canberra, ACT, starting at 10.00 hours, Monday, 20 November 1978.

Copies of the draft report have been forwarded to all witnesses who gave evidence at the previous hearing. Others interested may obtain a copy on request from the Secretary, Industries Assistance Commission, PO Box 80, Canberra, ACT 2600. Alternatively a copy may be obtained on loan from Department of Trade, 1 Victoria Street, London SW1H 0ET.

Inquiries: CRE 01-215 5319.

Ref: CRE 1537/76.

Belgium

Foodstuffs. The *Moniteur Belge*, 203, 20 October, published a decree on 27 July concerning additives permitted in foodstuffs. The decree came into force on 20 October and repeals the decree of 23 July 1968 on trade in citrus fruits treated with certain preserving agents and the decree of 30 August 1976 on foodstuffs additives. Foodstuffs prepared in compliance with the decrees of 23 July 1968 and 30 August 1976, but which do not satisfy the new regulations, may be marketed until 1 November 1979. Copies of the decree, in French, are available.

Inquiries: OTAR 01-248 5757 ext. 288/466/467.

Canada

Immigration law. Businessmen visiting Canada may be affected by an immigration law passed in April 1978. Implications of the new rules, due to come into force shortly, are:

British businessmen, including those visiting as part of missions and joint ventures, may need a visa to enter Canada. Businessmen do not need an employment authorisation provided they do not sell direct to the public and are staying for less than 90 days.

Selling to individual retail stores will not be considered selling to the public provided goods are for re-sale.

Technical or service workers may visit Canada to carry out emergency repairs. The Canadian company with equipment in need of repair or which requires urgent technical advice, must liaise with the federal immigration authorities for entry to be granted at the port of arrival.

Long-term contracts for servicing are subject to normal rules, namely 'Is there a Canadian able to do the job?'

Further information is available from the Canadian counsulates; in case of difficulty contact CRE 2/1, Room 429, 1 Victoria Street, London SW1, 01-215 3364.

Cayman Islands

Endangered species. The Cayman Islands authorities have introduced the Endangered Species Protection and Propagation Law 1978 to restrict the importation and exportation of certain animals, plants and articles.

Inquiries: OTAR 01-248 5757 ext. 7312/456/457.

The Gambia

Commercial representation. The British high commission, Banjul, has moved to new premises at 48 Atlantic Road, Fajara, Banjul, tel. 2133, 2134, 2578.

Inquiries: CRE 01-215 3064.

Grenada

Prohibited imports. The Grenada authorities have announced that the following items are to be added to the list of prohibited imports as from 1 January 1980:

Flour and flour products, formula feeds complete and concentrates for poultry, hogs, cattle and rabbits, processed corn.

Inquiries: OTAR 01-248 5757 ext. 7312/456/457.

Irish Republic

EEC origin textiles. The Irish Department of Industry and Commerce has announced that from 2 October import authorisation is no longer required for any textile products of EEC origin. Surveillance will continue to apply to certain textile products originating outside the EEC, which are imported direct or through other member states of the EEC.

For textiles of EEC origin a declaration on the invoice certified by the manufacturer is advisable. The text of the declaration was published in *Trade and Industry*, 25 August.

Inquiries: OTAR 01-248 5757 ext. 466/467/288.

Israel

Free Imports Order 1978. The Israeli authorities have issued the Free Imports Order 1978 which supercedes that of 1977.

The order contains two schedules, the first being items which require an import licence, the second being items which can only be imported provided that certain conditions are complied with.

Goods which are not included on these two schedules (ie a wide variety of goods), are allowed to be imported freely into Israel.

Inquiries: OTAR 01-248 5757 ext. 458/461.

Jordan

Customs documentation. Current documentation regulations for customs purposes do not require a certificate of origin when the origin of the goods is shown on the invoice but it is a condition that the invoice must show the export price of the goods and be certified by a chamber of commerce or similar organisation.

Invoices should show the following details:

Date of invoice.

Name and address of the sender of the goods

Name and address of the exporter of the goods.

Kind of goods.

Price of each unit and the whole value of the goods.

Any additional expenses made by the sender of the goods.

Quantity and net and gross weight of the goods.

Number, marks, weight, measurements and contents of parcels.

Country of origin of the goods, the means of transport used and the place from which they were shipped.

The British embassy has reported that when goods are exported from a town where there is a Jordanian embassy or consulate, such as London, the invoices must be certified by a chamber of commerce and also by the Jordanian embassy.

Outside London, certification of the invoice by a chamber of commerce or by a similar organisation is sufficient.

A copy of a note on documentation procedures can be obtained from OTAR 01-248 5757 ext. 7062/475.

Malaysia

Portland cement. The Malaysian government has passed the Customs Duties (Amendment No. 14) Order which came into force on 21 September and amends the first schedule to the customs duties order so that the import duty on Portland cement falling under CCCN 25.23 900 is changed from 1.97 ringitts per tonne to 17 ringitts per tonne.

In addition it has also passed the Customs Duties (exemption) (Amendment No. 2) Order which came into force on the same date so that the importer of portland cement falling under heading number 25.23 900 into peninsular Malaysia pays import duty at 1.97 ringitts per tonne and surtax at 5 per cent.

The government has also passed the Customs (Restriction of Movements) (No. 2) (Amendment) Order 1978 which also came into force on 21 September and amends the second schedule to the Customs (Restriction of Movements) (No. 2) Order 1977 so that the movement of portland cement between peninsular Malaysia, Sabah and Sarawak is restricted unless a special permit is obtained from the Secretary-General of the Ministry of Trade and Industry.

Inquiries: OTAR 01-248 5757 ext. 469/401/468.

Typewriter ribbons etc. The Malaysian government has, from 21 September, amended the first schedule to the Customs Duties Order 1978, so that it now reads as follows:

Heading/description	Unit of quantity	Import duty full
98.08 Typewriter and similar ribbons, whether or not on spools; ink-pads, with or without boxes: Typewriter and similar ribbons, whether or not on spools:		
110 of textile fabric	Value	5 sen per metre for a width not exceeding 2.54 cm and for every additional 2.54 cm or part thereof of width an additional 5 sen per metre
190 other than of textile fabric	Value	20%

Inquiries: OTAR 01-248 5757 469/401/468.

Do you use statistics?

The Government Statistical Service (GSS) prepares a wide range of reliable and detailed figures on the United Kingdom. It is usually worth checking to see if what you want is available from them. You can see many Government statistical publications at your local public library, buy them from HMSO or refer to the comprehensive collection held at the Statistics and Market Intelligence Library, Export House, 50 Ludgate Hill, London EC4N 7HU (tel. 01-248 5757 ext. 368).

A free pamphlet, *Government Statistics – a brief guide to sources*, gives up-to-date contact points in Departments for further information. You can obtain copies from regional officers of the Department of Industry or by writing to the Central Statistical Office Press and Information Service, Great George Street, London SW1P 3AQ.

DJB wins $1m Fiji order

DJB Engineering of Peterlee, has won an order worth over $1 million for eight D330, 33 ton payload articulated dumptrucks which will be employed on the largest project ever carried out in Fiji – the Manasavu hydro-electric scheme.

Mexico

Tariff amendments. Acuerdos of the Secretaria de Comercio published in Mexico's *Diario Oficial*, 16 October, amended the official prices of some foods in the following tariff headings:

28.56, 37.08, 41.02, 41.05, 41.06, 41.08, 43.02, 43.03, 43.04, 84.59, 84.61, 85.12, 85.23

Inquiries: OTAR 01-248 5757 ext. 476/474.

New Zealand

Contraceptives. The New Zealand government's Customs Import Prohibition (Contraceptives) Order 1978, which came into force on 13 October, prohibits the import of condoms – contraceptive or prophylactic sheaths – except with the consent of the Minister of Health and subject to such conditions as he thinks fit to impose.

The prohibition will not apply to the personal effects of a person arriving in New Zealand from overseas.

Inquiries: OTAR 01-248 5757 ext. 401/468/469.

Portugal

Import surcharge. Portuguese *Diario da Republica*, first series, 225, 29 September, published decree-law 300/78 which reduced from 1 October, the import surcharge which is levied on certain goods from 30 per cent to 20 per cent. The 60 per cent import surcharge payable on certain other goods remains in force.

Inquiries: OTAR 01-248 5757 ext. 460.

Qatar

Trade mark law. Law 3 of 1978 introduced trade mark legislation in Qatar for both trade and service marks. The law makes the following provisions:

A Trade Marks Bureau is to be set up under the Ministry of Trade and Economics, and a monthly *Trade Marks Journal* will be published.

The first applicant is entitled to registration, and registration cannot be contested if the proprietor in whose name the mark was registered has used it for a continuous period of five years.

Foreign nationals will enjoy the same privileges as nationals of Qatar where treaties or reciprocal treatment exists.

Marks are registered for an initial period of 10 years from the date of application, renewable for further periods of 10 years provided the anpropriate fees are paid in the year prior to renewal. There is no opposition upon renewal.

Where an application is amended at the request of the Trade Marks Bureau, the applicant has six months to comply with this request before the application is considered to have been abandoned.

An appeal may be made against the decision of the Trade Marks Bureau within 60 days from notification of refusal.

The new law has chapters on licensing of the mark, cancellation, trade descriptions, offences and penalties.

Fees in Rials are given from 18 April 1978.

A copy of the original law and a copy of an unofficial translation are available for public inspection in the Chancery House Annexe of the Science Reference Library (Holborn Division), Chancery House, Lower Ground Floor, Chancery Lane, London WC2A 1AY.

CRE Commercial Relations and Exports Divisions
Tel. Direct dialling (see end of each notice)

OTAR Overseas Tariffs and Regulations Section
Tel. 01-248 5757 (extension at end of each notice)

South Africa

Import permits. The Minister of Economic Affairs announced on 23 October a third-round allocation of import permits equal to 30 per cent of the total value issued in 1977 for consumer goods, clothing, confectionery and alcoholic beverages – including whisky.

This brings the total allocation for the year up to 110 per cent of the 1977 value and makes allowance for the decline in the value of rand (which is tied to the US dollar).

Inquiries: OTAR 01-248 5757 ext. 471/462/472/473.

Thailand

Special import fees. The Thai Board of Investment has issued the following:

In notice 37/2521 whereby a special fee is placed on the import of aluminium foil (whether or not embossed, cut to shape, perforated, coated, printed, or backed with paper or other reinforcing material) of a thickness (excluding any backing) not exceeding 0.15 mm at the following rates: for the types classified under CCCN 76.04a at the rate of 40 per cent of the cif price; for the types classified under CCCN 76.04b at the rate of 10 per cent of the cif price.

Notice 38/2521 places a special fee of 25 per cent of the cif price on the import of glass fibre of the type used as heat insulator, for absorbing sound and for air filtering, coming under CCCN 70.20c.

In notice 39/2521 a special fee of 20 per cent of the cif price is placed on the import of iron or steel wire, plated or galvanised, of a cross section from 0.45 mm to 6 mm coming under CCCN 73.14a.

For all the items in the above three notices the Board of Investment shall determine which imports shall pay the special fee and inform the Customs department accordingly All three notices came into effect on 2 October and remain in force until 2 October 1979.

Inquiries: OTAR 01-248 5757 ext. 401/468/469.

United States

Titanium dioxide. The United States Treasury opened on 25 October an anti-dumping investigation into the supply of titanium dioxide from the UK, and will be asking the United States Trade Commission for a preliminary injury determination. The commission determination is due 30 days from the day of initiation.

Inquiries: CRE 01-215 5397.

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European community news

Competition rules: favourable decision on medical research joint venture

The European Commission intends to decide in favour of a medical research joint-venture agreement but before doing so invites comments from interested third parties.

The agreement, between a British and a United States company, sets up a joint research and development programme to find a product for the long-term prophylactic treatment of people with a family medical history of hypertension of heart disease, caused by the impairment of the blood's circulation.

The *Official Journal of the European Communities*, C248, 19 October, contained a notice, relating to article 19(3) of regulation no. 17, concerning the agreement between the Beecham Group Ltd (incoporated in the UK), and Parke, Davis and Co (a Warner Lambert Inc. subsidiary, incorporated in the United States) which was entered into on 4 May 1973.

The programme is divided into two stages. The project was the first stage and lasted for five years, ending by mutual consent in May 1978. Its aim was to identify promising candidate substances and complete tests for their study. The second stage, which is the development programme, is intended to develop approved compounds with a view to marketing. This can now start.

Both parties will contribute equally to the joint programme, each setting up a research team and sharing the details of all work carried out. This collaboration will prevent duplication of work, allow costs and expertise to be shared, in this way improving the chances of creating a successful product of considerable benefit where there is at present no effective treatment.

Following representation by the commission, the parties agreed to remove from the agreement certain restrictions concerning the grant of licences and exploitation of marketing benefits, but either party has the right to apply for patents in its own name covering results derived from its contribution to the project. The patent holder in any country will be able to grant non-exclusive royalty-free licences to make use of or sell the product with power to sub-licence to the other party.

Comments should be sent to the Commission of the European Communities, Directorate-General for Competition, Directorate for Restrictive Practices and Abuse of Dominant Positions, Rue de la Loi 200, B – 1049 Brussels, within one month from 19 October 1978, quoting reference no. IV/28 796.

Further information can be obtained from the Department of Prices and Consumer Protection, Fair Trading Division, Millbank Tower, Millbank, London SW1P 4QU, tel 01-211 5122.

More community news

Information on European community matters and about member states can often be found in other sections of *Trade and Industry*. For this week's additional news, turn to the following pages:

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Plastics in contact with food: discussions open

Discussions have started between the Ministry of Agriculture, Fisheries and Food (MAFF), and industry, consumers and other interested parties, on a proposed EEC directive dealing with plastic materials which come into contact with food.

The proposed directive sets a limit for the migration of the constituents of plastic materials and articles intended to come into contact with food (Com(78) 115). It also sets out basic methods for checking the migration.

The proposal was sent to the council by the commission on 30 May (*Official Journal* C141/, 16 June), but negotiations in Brussels have not yet begun.

The proposed limit is 60 mg/kg for food and 60 mg/litre for liquids. For technical reasons plastic sheets and foils, and containers of less than 250 ml capacity, have to be measured in a different way, and for these the limit of 60 mg/kg has been arbitrarily equated to 10 mg/dm² of the surface area.

The idea of an EEC directive on this subject has been discussed within the community for many years, and it had been expected that any proposal would embrace wide-ranging controls, including a permitted list of ingredients. In the event, the formal proposal included only one aspect of control, and there was no detailed definition of 'plastics'. Indeed, in article 1(3), there appeared a list of items – for example, natural and synthetic rubbers, and regenerated cellulose film – which would be exempted from the requirement of the directive.

If the directive were adopted in its present form, it would be difficult to assess the consequences as essential details have been omitted, or left for discussion at a later stage. Many of its provisions are ambiguous, and will require clarification and explanation, but the directive is obviously a matter of the greatest importance to some sections of the UK plastics industry.

Motor cycle noise and tractor lighting directives

Directives setting the noise level for motor cycles, and the standards for lighting devices on tractors, were adopted by the council of ministers at the foreign affairs council on 17 October.

The maximum noise level for motor bikes will be between 78 and 86 decibels, depending on the cylinder size of the cycles. Member states have up to 1 October 1980 to comply with this directive.

Member states have 18 months in which to meet EEC standards for tractor lighting.

Stainless steel bar from Spain: dumping order amended

The Anti-Dumping Duty (No. 2) Order 1977 imposing anti-dumping duties on certain grades of stainless steel bar from Spain has been amended with effect from 10 November in order to clarify the metallurgical composition of one of the grades intended to be covered by the order. In all other respects the order, which imposed an 8 per cent duty on some grades of the steel, is unchanged.

The Anti-Dumping Duty (Amendment) Order 1978 states that:

In paragraph (c) in the second column of the schedule to the Anti-Dumping Duty (No. 2) Order 1977(e) for not less than 0.4 per cent by weight of titanium' there shall be substituted 'a titanium content not less than 5 times the carbon content by weight'.

New EEC documents

This list of EEC documents has been deposited in the House of Commons (commission reference numbers, where appropriate, are given in parentheses). They are available from European Integration Department (Internat), FCO, London SW1A 2AA, tel. 01-233 5329/5701.

EEC draft instruments

R/2461/78. Proposal for a council regulation on the adjustment of capacity for the carriage of goods by road for hire or reward between member states. COM(78) 479.

R/2532/78. Proposals for regulations on the consolidated texts relating to the wine sector. COM(78) 327.

R/2545/78. Proposal for a council decision introducing a community system of information on accidents in which products are involved, outside the spheres of occupational activites and road traffic. COM(78) 403.

R/551/78. Proposals for a council regulation (EEC) laying down general rules for the fixing of the import levy on olive oil by tender. COM(78) 485.

S/1569/78. Proposal for a council regulation (EEC) amending regulation (EEC) No. 1850/78 laying down certain measures for the conservation and management of fishery resources applicable to vessels flying the flag of Sweden. COM(78) 503.

S/1659/78. Proposal for a council regulation (EEC) suspending application of the condition to which the importation into the community of certain types of citrus fruit originating in Spain is subject by virtue of the agreement between the community and that country. COM(78) 481.

S/1661/78. Proposal for a council regulation (EEC) opening and providing for the administration of a community preferential ceiling for certain petroleum products refined in Turkey and establishing community supervision of imports thereof (1979). *COM(78) 486.*

R/2570/78. Proposal for a council regulation (EEC) laying down for the marketing year 1978-79 general rules in respect of *production aid for olive oil; proposal for a council regulation* (EEC) laying down special measures for the marketing year 1978-79 in respect of olive oil producer organisations; proposal *for a council regulation (EEC) on intervention in the olive oil* sector. COM(78) 504.

R/2574. Proposal for a council directive amending for the 14th time directive 64/54/EEC on the approximation of the laws of the member states concerning the preservatives authorised for use in foodstuffs intended for human consumption. COM(78) 488.

R/2384/78 Add. 1. Amendments to the proposal for a council regulation (EEC) laying down for 1978 measures for conservation and management of fishery resources by the establishment of quotas. COM(78) 485.

Consultative documents

R/2369/78. Report on the situation in the milk sector. COM(78) 430.

R/2519/78. Proposal for the transfer of appropriations within the commission's budget estimates for 1978. COM(78) 498.

R/2503/78. Admission to institutions of higher education of students from other member states. COM(78) 468.

New legislation

The legislation listed below has been published in the *Official Journal of the European Communities* as indicated against each item. The *Official Journal* is published in English and copies should be obtained from HMSO. Information about the items listed, in so far as other member states' requirements are concerned, is available to British exporters from Department of Trade, Export Services and Promotions Division, Export House, 50 Ludgate Hill, London EC4M 7HU, tel. 01-248 5757 ext. 7174/482/408.

Common agricultural policy

The texts of the following regulations which affect the various agricultural sectors in the EEC have been published in the *Official Journal of the European Communities.*

Milk and milk products. Regulation (EEC) 2342/78 amending regulation (EEC) 1993/78 concerning measures to development the use and consumption of milk products of community origin outside the community through technical and/or commercial assistance. (*Official Journal* L 282, 7 October 1978)

Regulation (EEC) 2413/78 amending annex II to regulation (EEC) 2054/76 on the sale for export to non-member countries of skimmed-milk powder held by intervention agencies and intended for use as feed (*Official Journal* L 292, 18 October 1978).

Wine. Regulation (EEC) 2393/78 laying down detailed rules for the application of the additional measures applicable to holders of long-term storage contracts for table wine for the wine-growing year 1977/78 (*Official Journal* L 288, 14 October 1978).

Regulation (EEC) 2394/78 on the application of the additional measures applicable to holders of long-term storage contracts for certain table wines for the wine-growing year 1977/78 (*Official Journal* L 288, 14 October 1978).

Regulation (EEC) 2444/78 authorising Germany, France, Luxembourg and the UK to permit under certain conditions an additional increase in the alcoholic strength of certain wines and certain products intended for wine-making (*Official Journal* L 295, 20 October 1978).

Hops. Regulation (EEC) 2397/78 on attestations of *equivalence for hops imported from non-member countries* (*Official Journal* L 289, 14 October 1978).

Imports from non-member states

The *Official Journal of the European Communities* L 288, 14 *October 1978, contains the texts of the following decisions* which authorise the relevant member state to refuse entry to the specified goods.

Decision 78/828/EEC: authorising Belgium, Luxembourg and the Netherlands not to apply community treatment to men's and boys' shirts, woven, of wool, of cotton or of man-made *textile fibres, falling within heading ex 61.03 of the common* customs tariff (Nimexe codes 61.03-11, 15, 19), originating in Taiwan and in free circulation in the other member states.

Decision 78/829/EEC: authorising France not to apply community treatment to woven suits (including co-ordinate suits consisting of two or three pieces, which are ordered, *packed, consigned and normally sold together), of wool, of* cotton or of man-made textile fibres, falling within heading ex 61.01 of the common customs tariff (Nimexe codes 61.01-51, 54, 57), *originating in Romania and in free circulation in the* other member states.

Decision 78/830/EEC: authorising Belgium, Luxembourg *and the Netherlands not to apply community treatment to bed* linen, woven, falling within subheading ex 62.02 B of the common customs tariff (Nimexe codes 62.02-11, 19), originating in Romania and in free circulation in the other member states.

Decision 78/831/EEC: authorising Ireland not to apply community treatment to woven cotton terry fabrics; toilet and *kitchen linen of woven cotton terry fabrics, falling within* heading 55.08 or subheading ex 62.02 B of the common customs tariff (Nimexe codes 55.08-10, 30, 50, 80; 62.02-71), *originating in India and in free circulation in the other member* states.

Decision 78/839/EEC: authorising Ireland not to apply *community treatment to table linen, toilet linen and kitchen* linen, woven, other than cotton terry fabric, falling within subheading ex 62.02 B of the common customs tariff (Nimexe *codes 62.02-41, 43, 47, 65, 73, 77), originating in Hong Kong* and in free circulation in the other member states.

The Official Journal of the European Communities L 293, 19 *October 1978, contains the texts of the following decisions* which authorise the relevant member state to refuse entry to the specified goods.

Decision 78/844/EEC: authorising Belgium, Luxembourg and the Netherlands not to apply community treatment to bed linen, table linen, toilet and kitchen linen falling within *subheading ex 62.02 B of the common customs tariff (Nimexe* codes 62.02-73) originating in the People's Republic of China and in free circulation in the other member states.

Decision 78/845/EEC: authorising France not to apply community treatment to knives with cutting blades, serrated or not, including pruning knives (save for knives with handles of ivory or of gilt- or silver-plated base metals) *falling within heading ex 82.09 of the common customs tariff originating in* Japan and in free circulation in the other member states.

EEC/Maghreb and Mashraq co-operation agreements

The texts of the EEC co-operation agreements with Algeria, Egypt, Jordan, Lebanon, Morocco, Syria and Tunisia which enter into force on 1 November 1978 have now been published *in the Official Journal of the European Communities as follows:*

Algeria. Regulation (EEC) 2210/78 (*Official Journal* L263, 27 September 1978) concerning the conclusion of the co-*operation agreement between the European Economic Com*munity and Algeria including:

Co-operation agreement between the European Economic Community and Algeria

Protocol 1 on technical and financial co-operation

*Protocol 2 concerning the definition of the concept of 'originat*ing products' and methods of administrative co-operation

Final Act

78/798/ECSC: Agreement between the Member States of the European Coal and Steel Community and Algeria.

Egypt. Regulation (EEC) 2213/78 (*Official Journal* L266, 27 September 1978) on the conclusion of the Co-operation Agreement between the European Economic Community and Egypt including:

Co-operation agreement between the European Economic Community and Egypt

Protocol 1 on technical and financial co-operation

Protocol 2 concerning the definition of the concept of 'originating products' and methods of administrative co-operation

Final Act

Jordan. Regulation (EEC) 2215/78 (*Official Journal* L268, 27 September 1978) concerning the conclusion of the Co-operation agreement between the European Economic Com*munity and Jordan including:*

Co-operation agreement between the European Economic Community and Jordan

Protocol 1 on technical and financial co-operation

Protocol 2 concerning the definition of the concept of 'originating products' and methods of administrative co operation

Final Act

Lebanon. Regulation (EEC) 2214/78 (*Official Journal* L267, 27 September 1978) concerning the conclusion of the Co-operation agreement between the European Economic Com*munity and the Lebanon including:*

Co-operation agreement between the European Economic Community and Lebanon

Protocol 1 on technical and financial co-operation

Protocol 2 concerning the definition of the concept of 'originating products' and methods of administrative co-operation

Final Act

Morocco. Regulation (EEC) 2211/78 (*Official Journal* L264, 27 September 1978) concerning the conclusion of the co-operation agreement between the European Economic Com*munity and Morocco including:*

Co-operation agreement between the European Economic Community and Morocco

Protocol 1 on technical and financial co-operation

Protocol 2 concerning the definition of the concept of 'originating products' and methods of administrative co-operation

Final Act

78/799/ECSC: Agreement between the Member States of the European Coal and Steel Community and the Kingdom of Morocco.

Syria. Regulation (EEC) 2216/78 (*Official Journal* L269, 27 September 1978) concerning the conclusion of the co-*operation agreement between the European Economic Com*munity and Syria including:

Co-operation agreement between the European Economic Community and Syria

Protocol 1 on technical and financial co-operation

*Protocol 2 concerning the definition of the concept of 'originat*ing products' and methods of administrative co-operation

Final Act

Tunisia. Regulation (EEC) 2212/78 (*Official Journal* L265, 27 September 1978) concerning the conclusion of the co-*operation agreement between the European Economic Com*munity and Tunisia including:

Co-operation agreement between the European Economic Community and Tunisia

Protocol 1 on technical and financial co-operation

*Protocol 2 concerning the definition of the concept of 'originat*ing products' and methods of administrative co-operation

Final Act

78/800/ECSC: Agreement between the Member States of the European Coal and Steel Community and the Republic of Tunisia.

The commercial provisions of these agreements have been *in force since 1 July 1976 having been implemented by interim* agreements with the countries concerned.

Copies of the *Official Journals* may be obtained from HMSO, *price £1.65 plus postage (L266 to 269), and £2.20 plus postage* (L263 to 265).

Further information: Department of Trade, Commercial Relations and Exports Division, 1 Victoria Street, London SW1H 0ET, tel. 01-215 3472.

Harmonisation of legislation

Motor vehicles and trailers. The *Official Journal of the Euro*pean Communities L284, 10 October 1978, contains the follow*ing corrections to:*

Directive 77/538/EEC on the approximation of the laws of the member states relating to rear fog lamps for motor vehicles and *their trailers published in the Official Journal* L220, 29 August 1977. Page 66, Annex II, point 1.2.1, second and third lines: *For:* '. . . the International Commission on Illumination (CIE);', *read:* '. . . the International Electrotechnical Commission (IEC);'.

Directive 77/539/EEC on the approximation of the laws of the *member states relating to reversing lamps for motor vehicles* and their trailers published in the *Official Journal* L220, 29 August 1977. Page 78, Annex II, point 1.2.1, second and third *lines:*
for: '. . . the International Commission on Illumination (CIE);', *read:* '. . . the International Electrotechnical Commission (IEC);'.

Directive 77/540/EEC on the approximation of the laws of the member states relating to parking lamps for motor vehicles published in the *Official Journal* L220, 29 August 1977. Page 90, Annex IV, point 1.2.1, second and third lines:
for: '. . . the International Commission on Illumination (CIE);', *read:* '. . . the International Electrotechnical Commission (IEC);'.

Customs notices of interest to exporters

The following public notices issued by HM Customs and Excise relate to various aspects of export procedure. Copies of these notices may be obtained from local offices of Customs and Excise, addresses of which appear in the telephone directory or from the Secretary, HM Customs and Excise, 39-41 Mark Lane, London EC3R 7HE.

7	Drawback of excise duty on mixed or blended beers.
17	Trade between the United Kingdom and the Channel Islands.
49	Temporary importations: information document.
104	ATA Carnets.
112	Authorised hours for customs work at ports, airports and in long rooms and charges for attendance given at the request of merchants.
112A	Charges for attendance given at private premises at the request of merchants.
118	Samples imported for promoting export trade.
156	Continental Shelf.
172	Hydrocarbon oils: drawback of excise duty.
210	Temporary importation of films and similar goods for copying, printing, etc., to fulfill export orders.
221	Duty relief under the Inward Processing Relief Regulations 1977.
224	Beer exported on drawback as merchandise: examination and sampling.
235	Relief on goods to be processed or repaired outside the Community.
236	Returned Goods Relief EEC 1977.
242	European Economic Community: compensatory levy: arrangements after 30 June 1977.
266	Goods not in accordance with contract: repayment of customs duty.
275	Documentation of exports for statistical purposes.
276	Customs Export declarations in the C273 and C63A Series and Export declarations forming part of Customs Export control documents – guidance on their completion.
290	Export of personal and household effects.
291	Effect of budget changes on claims for drawback.
300	Export reliefs scheduling scheme.
703	VAT – exports.
704	VAT – retail export schemes.
705	VAT – tax free sales of motor vehicles to tourists, etc.
750	Community transit – this describes the system as a whole.
750A	List of community transit offices.
751	Notes on completing community transit forms T1, T2 and T3 and control copy T forms.
753	Community transit – the simplified procedure for goods carried by rail.
754	Community transit – intra-community treatment of the catches of fishing vessels registered in member states.
755	Community transit – special control procedures.
800 (Aug 1975)	The European Economic Community. Common agricultural policy: customs procedures in respect of export refunds, levies and licences.
811	EEC preferences – Greece.
812	EEC preferences – Turkey.

Statistics

The economy: selected indicators

Series are seasonally adjusted except where shown otherwise

	Gross domestic product (average estimate)	Consumers' expenditure	Fixed capital expenditure			Changes in stocks				Balance of payments		
				of which			of which					
			Total	Manufacturing industry	Distributive and service industries excl. shipping	Total	Manufacturing industry	Wholesalers	Retailers	Current balance	Visible balance	Invisible balance
	at 1975 prices		at 1975 prices			at 1975 prices				at current prices		
Base of index Series in Stock level at end-1977	1975	£ million	£ million			£ million 34,469	20,261	4,540	3,181	£ million		
1971	94.5	59 340	20 208	3 923	3 888	235	−277	218	12	1 090	261	829
1972	96.7	62 762	20 239	3 398	4 055	73	−279	173	29	135	−722	857
1973	103.4	65 497	21 609	3 504	4 674	2 983	1 336	432	624	−999	−2 383	1 384
1974	101.4	64 070	21 164	3 822	4 605	1 462	1 288	361	−180	−3 591	−5 235	1 644
1975	100.0	63 192	20 817	3 522	3 841	−1 925	−1 221	−249	−100	−1 855	−3 236	1 381
1976	102.9	63 320	20 489	3 345	3 926	261	316	131	13	−1 137	−3 589	2 452
1977	104.8	62 732	19 738	3 573	4 325	1 051	442	266	29	289	−1 709	1 998
1976 2nd qtr	102.7	15 785	5 137	828	972	−34	−46	−10	−67	−313	−949	636
3rd qtr	103.3	15 884	5 168	849	1 005	173	83	81	46	−416	−1 132	716
4th qtr	104.0	15 927	4 997	856	1 014	211	255	17	27	−329	−958	629
1977 1st qtr	103.7	15 619	4 794	851	1 030	475	267	82	117	−495	−973	478
2nd qtr	104.6	15 495	5 025	879	1 044	336	79	179	−4	−297	−762	465
3rd qtr	105.2	15 777	4 965	910	1 103	−7	−18	−80	−59	574	31	543
4th qtr	105.7	15 841	4 954	932	1 149	247	115	85	−33	507	−5	512
1978 1st qtr	106.0	16 361	5 015	920	1 169	324	71	81	62	−317	−612	295
2nd qtr	107.6	16 373	5 024	971	1 172	386	215	−41	128	198	−135	333
3rd qtr		16 648 pe								−44	−269	225
% change last 2 qtrs on prev. 2 qtrs.	+1.3	+2.5	+1.2	+2.7	+4.0							
on a year earlier	+2.5	+5.6	+2.2	+9.3	+12.9							

	Industrial production		Personal expenditure		Prices and earnings				Labour (UK)			Visible trade (volume)	
	Total all industries	Total manufacturing industries	Retail sales	Cars: new registrations	Retail prices	% increase on a year earlier	Wholesale prices: all manufacturing industry: basic materials and fuel used	Wholesale prices: all manufacturing industry: manufactured products: home sales	Average gross earnings of all employees (GB, all industries and services covered)	Unemployed excluding school leavers and adult students: mid-month count	Unemployed excluding school leavers and adult students: % of total employees	Unfilled vacancies for adults: mid-month count	Export	Import
				monthly averages									On a balance of payment basis	
	at 1975 prices		at 1971 prices		(not seasonally adjusted)				(old series)				at 1975 prices	
Base of index £m in base year Series in	1975	1975	1971 16,296	thousands	Jan 1974		1975	1975	Jan 1970	thousands		thousands	1975 19,463	1975 22,699
1971	–	–	100.0	108.5	80.0	9.4	23.2	47.6	118.7	775.8	3.4	130.9	85.4	85.7
1972	–	–	105.3	138.6	85.7	7.1	24.2	50.1	134.0	854.9	3.7	147.3	85.2	95.3
1973	109.5	108.4	110.3	137.1	93.5	9.1	55.8	66.6	152.1	611.0	2.6	307.0	97.8	108.7
1974	105.1	106.5	109.0	102.8	108.5	16.0	86.3	81.9	179.1	599.7[1]	2.6[1]	302.7[1]	104.3	109.7
1975	100.0	100.0	106.7	97.2	134.8	24.2	100.0	100.0	226.6	929.0	3.9	150.0[1]	100.0	100.0
1976	102.0	101.4	106.5	104.7	157.1	16.5	127.0	117.3	261.9	1 269.8[1]	5.4[1]	120.4[1]	109.8	105.7
1977	105.8	102.9	103.6	107.1	182.0	15.8	145.6	140.6	288.5	1 378.1	5.8	155.6[1]	118.9	107.1
1977 1st qtr	105.6	103.9	103.3	104	174.1	16.5	144.8	133.0	280.0	1 329.5	5.6	..	115.8	109.4
2nd qtr	105.5	102.4	102.5	103	181.9	17.4	148.8	139.6	285.3	1 340.6	5.6	157.7	118.0	109.6
3rd qtr	106.3	103.2	104.3	112	184.7	16.5	146.5	143.8	288.3	1 414.6	5.9	151.9	124.4	106.6
4th qtr	105.8	102.0	104.4	110	187.4	13.1	142.2	145.8	300.4	1 427.8	6.0	160.1	117.6	102.7
1978 1st qtr	107.0	102.3	106.3	129	190.6	9.5	140.2	149.2	310.8	1 409.4	5.9	187.7	119.9	114.1
2nd qtr	110.5	104.2	108.0	130	195.8	7.7	146.3	151.8	329.0	1 372.7	5.7	210.3	122.2	109.6
3rd qtr			111.2 p	132	199.2	7.8	145.0	154.7		1 380.5 p	5.8	213.0	126.2	116.0
1977 Oct	105.6	101.7	102.7	116	186.5	14.1	143.7	145.3	295.8	1 431.5	6.0	156.0	119.0	101.4
Nov	105.5	101.5	103.1	108	187.4	13.0	142.0	145.7	300.5	1 429.6	6.0	159.4	115.1	98.5
Dec	106.3	102.7	106.9	104	188.4	12.1	141.0	146.3	304.8	1 422.3	6.0	165.0	118.8	108.1
1978 Jan	106.8	102.2	104.9	125	189.5	9.9	139.4	148.3	306.3	1 419.2	5.9	180.3	111.7	114.4
Feb	107.3	102.1	106.8	120	190.6	9.5	139.1	149.2	311.2	1 409.0	5.9	187.0	127.2	111.1
Mar	107.0	102.8	107.0	142	191.8	9.1	142.0	150.0	314.8	1 400.0	5.9	195.8	120.9	116.7
Apr	110.7	104.6	106.7	132	194.6	7.9	145.1	150.9	325.7	1 387.1	5.8	203.7	125.7	103.7
May	109.6	102.9	108.4	124	195.7	7.7	146.8	151.9	327.2	1 366.4	5.7	209.9	119.2	113.8
Jun	111.0	105.0	108.7	133	197.2	7.4	147.0	152.7	334.0	1 364.7	5.7	217.4	121.6	111.3
Jul	110.2	104.1	111.4	108	198.1	7.8	145.8	153.8	332.7	1 371.4	5.7	211.0	127.0	115.8
Aug	110.7 p	105.0 p	111.8	146	199.4	8.0	144.2 p	154.8 p	332.9 p	1 392.1	5.8	209.3	124.9	111.4
Sep			110½ p	144	200.2	7.8	145.0 p	155.5 p		1 378.3	5.8	218.7	126.7 p	120.9 p
Oct										1 359.6 p	5.7	228.4		
% change latest 3 months														
on prev. 3 months	+1.4	+1.2	+3.0	+2.1	+1.7		−0.9	+1.9	+3.3	+0.7		+2.8	+3½	+6
on a year earlier	+4.8	+2.1	+6.6	+18.1	+7.5		−1.0	+7.6	+16.2	−3.4		+43.8	+1½	+9

p Provisional pe 1st Preliminary e Estimate [1] Average of available months

Inquiries: 01-215 3453

Economic indicators of the industrial countries

The tables have been prepared for the convenience of users who do not have access to the sources themselves. International publications (as indicated) have been used, supplemented, where available, by later reports, denoted – e. The form of presentation adopted – indicators by subject – is for convenience only, and it must not be assumed that the indicators in the same table for different countries are strictly comparable. An attempt has been made to indicate major differences of definition, but the coverage and methods of collection vary considerably; this is partly due to different administrative procedures in various countries. Fuller details may be obtained from the sources indicated and from the national publications of the countries concerned. Exchange rates are those used in the basic data sources. The group of industrial countries is taken as comprising the members of the Organisation for Economic Co-operation and Development (OECD), ie western Europe, north America, Japan, Australia and New Zealand. Consumer prices apart, New Zealand is excluded from OECD totals in that insufficient information is available.

The five tables in this article are published monthly. A full set of tables with commentary appears quarterly (see 8 September).

Consistent with the OECD source, indices now appear on 1975 = 100.

Inquiries: 01-215 3442.

Table 1 Industrial production (excluding construction) seasonally adjusted

Indices 1975 = 100

	Belgium	Luxembourg	France [2]	F.R. of Germany	Ireland	Italy	Netherlands	United Kingdom	EEC [1] [3]	Canada	United States	Japan	OECD [3]
Weights in total	1.6	0.1	7.9	13.5	0.2	4.9	1.8	5.6	35.6	3.7	34.9	15.5	100
1974	111	128.1	108	106.0	107	109.7	105	105.0	107	105.7	109.8	111.7	109
1975	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100.0	100.0	100
1976	109	106.3	109	107.3	109	111.6	106	102.7	107	105.1	110.2	111.0	109
1977	108	106.9	110	110.5	118	111.6	107	107.5	110	109.3	116.4	115.6	113
1976 1st quarter	105	104.8	107	106	106	107.4	104	100.0	105	103.4	108.0	106.6	106
2nd	110	111.6	108	107	108	111.3	106	102.7	107	105.8	109.8	110.4	108
3rd	109	103.9	110	109	110	113.1	107	102.8	108	105.3	111.1	112.7	109
4th	110	105.1	110	110	112	117.9	108	105.4	110	105.9	111.7	113.9	111
1977 1st quarter	111	107.6	113	111	114	121.0	107	107.6	112	108.5	113.4	115.3	112
2nd	109	111.1	110	110	118	112.5	108	107.5	110	108.6	116.3	115.2	113
3rd	107	101.5	109	110	117	111.7	105	108.0	110	109.4	117.5	115.1	113
4th	107	106.2	109	111	123	109.3	107	106.9	109	110.9	118.3	116.6	114
1978 1st quarter	109	114.5	111	111	127	114.4	106	108.4	111	111.6	118.5	120.0	115
2nd	109	114.7	114	111	130 e	112.8	106	111.2	111	113.1	122.2	122.1	116
3rd											124.4 e		
1977 April	109	107.5 e	111	110 e		113.5	111	107.0	110 e	108.0	115.5	115.2	113 e
May	109	113.5 e	110	110 e		115.9	107	109.1	110 e	108.3	116.3	114.8	113 e
June	108	112.4 e	113	110 e		108.2	106	106.3	110 e	109.6	117.0	115.6	114 e
July	105	105.3 e	111	110 e		110.1	104	107.6	109 e	109.0	117.7	113.7	112 e
August	111	91.1	111	110		111.0	104	108.2	110	109.4	117.2	115.9	113
September	106	108.3	112	111		113.9	106	108.3	111	109.8	117.6	115.7	114
October	104	101.5	109	110		109.0	106	106.6	109	110.6	117.9	115.0	113
November	107	110.9	111	110		111.3	105	106.5	110	110.8	118.3	117.0	114
December	110	106.1	108	113		107.6	109	107.5	110	111.3	118.6	117.9	114
1978 January	111	117.2	112	114		112.4	107	108.1	112	109.9	117.8	119.1	115
February	109	116.2	111	110		115.9	106	108.8	111	112.1	118.2	119.2	114
March	107	109.9	114	110		114.8	107	108.4	111	112.8	119.6	121.7	116
April	112	114.0	116	110		112.1	108	111.5	112	113.3	121.6	121.8	117
May	108	116.3	113	110		113.6	103	110.1	111	112.3	122.2	122.2	116
June	108	113.9	112	112		112.6	106	111.9	112	113.6	123.0	122.3	117
July	102	113.2		116		113.1	108	111.4	114 e	114.9	123.9	121.2	118 e
August				114 e		110.8 e		112.0		114.0 e	124.4	122.3	
September											125.0 e		
% change latest three months On previous three months	−3.0	1.0	1.2	3.6	2.4	−1.2	−1.2	1.6	0.9	1.2	1.8	—	1.2
On a year earlier	−1.2	3.7	2.1	3.6	10.2	2.2	—	4.1	2.4	4.4	5.9	6.0	3.5

[1] Excluding Denmark. [2] Yearly and quarterly data have more complete coverage than monthly data. [3] The monthly figures for OECD and EEC are weighted by Department of Trade consistent with the quarterly figures published by OECD. e Estimated.

Source: United Kingdom, Department of Trade; all others 'OECD Main Economic Indicators'.

Government Publications in the west

from

Her Majesty's Stationery Office, Wine Street, Bristol, BS1 2BQ

Table 3 **Unemployment** seasonally adjusted*

Numbers thousands

	Belgium [5]	Denmark [1,7]	France [1,9]	F.R. of Germany [1]	Ireland [3]	Italy [4,6,9]	Nether-lands [1]	United Kingdom [1,3]	Canada [4]	United States [4]	Japan [4]
1971	71	*30*	*337*	185	42	*613*	62	776	552	4 993	639
1972	87	*30*	*380*	246	48	*696*	108	855	562	4 840	730
1973	92	*21*	*394*	274	44	*669*	110	611	520	4 305	670
1974	105	*50*	*498*	583	48	*560*	135	600 [8]	521	5 076	740
1975	177	*124*	*840*	1 074	75	*654*	195	929	697	7 830	1 000
1976	229	*126*	*933*	1 060	84	*732*	211	1 270	736	7 288	1 080
1977	264	164	*1 073*	1 030	82	1 545	204	1 378	862	6 856	1 100
1976 1st quarter	213	*118*	*929*	1 136	82	*681*	211	1 220	703	7 224	1 072
2nd	227	*115*	*928*	1 040	84	*693*	209	1 261	728	7 111	1 102
3rd	236	*120*	*925*	1 031	85	*776*	217	1 300	748	7 363	1 101
4th	238	*126*	*942*	1 014	84	*777*	206	1 313	770	7 443	1 038
1977 1st quarter	246	147	997	1 018	82	1 459	197	1 330	826	7 161	1 032
2nd	261	156	*1 069*	1 025	83	1 432	200	1 341	852	6 889	1 110
3rd	276	163	*1 149*	1 054	83	1 692	213	1 415	878	6 736	1 150
4th	276	171	1 073	1 023	80	1 598	205	1 428	900	6 554	1 126
1978 1st quarter	275	185	1 055	1 014	78	1 520	197	1 409	910	6 155	1 146
2nd	285	183	1 141	984	76	1 455	201	1 373	943	5 962	1 267
3rd	288 e		1 251	1 008e		1 658		1 380		6 054	
1977 April	254	153	*1 037*	1 016	82		194	1 334	868	6 869	1 030
May	262	157	*1 066*	1 019	83		200	1 324	840	6 894	1 127
June	267	160	*1 105*	1 041	83		205	1 364	848	6 904	1 172
July	272	161	*1 140*	1 059	83		208	1 399	866	6 719	1 189
August	282	163	*1 174*	1 059	84		217	1 410	881	6 821	1 143
September	275	165	*1 132*	1 043	82		213	1 435	887	6 668	1 118
October	272	167	1 097	1 034	81		209	1 432	887	6 688	1 055
November	283	171	1 068	1 027	81		206	1 430	903	6 663	1 150
December	272	176	1 054	1 009	79		200	1 422	911	6 310	1 172
1978 January	274	181	1 028	1 002	78		199	1 419	891	6 226	1 112
February	274	184	1 050	1 028	77		196	1 409	901	6 090	1 150
March	278	191	1 086	1 012	77		197	1 400	938	6 148	1 175
April	282	184	1 106	978	77		196	1 387	935	5 983	1 198
May	289	182	1 132	987	76		201	1 366	949	6 149	1 273
June	286	182	1 186	989	74		205	1 365	944	5 754	1 329
July	286	183	1 241	1 009			210	1 371	927	6 193	1 304
August	295	184	1 277	1 020			222	1 392	941	5 968	1 305
September	283 e		1 235	996 e				1 378		6 002	
October								1 360			
Rate % latest month	10.4 e	8.5	6.6	4.4 e	10.3	7.5	5.6 e	5.7	8.5	6.0	2.3
% change latest three months											
On previous three months	0.8	−1.4	9.6	2.4	−2.2	14.0	7.2	0.7	−0.4	1.5	8.0
On a year earlier	4.2	13.4	n.a.	−4.3	−8.5	−2.0	1.1	−3.4	8.4	−10.1	12.4

*Unemployment data are defined and collected on different bases in different countries. The following notes indicate main variations preventing direct international comparison. [1] Numbers registered at employment offices. Rates are calculated as percentages of total employees. [3] Excluding school leavers. [5] Insured unemployed. Rates are calculated as percentages of total insured population. [4] Labour force sample survey. Rates are calculated as percentages of total labour force. The quarterly data for Italy relate to January, April, July and October. [6] Estimated in the absence of one month's figures. [9] From 1977, new method of calculating unemployment which is not consistent with the previous figures. [7] From 1977, including unemployed insured for loss of part time jobs. [8] Not seasonally adjusted. [9] Data from October 1977 are affected by administrative changes which tend to reduce the figures. e Estimated. n.a. Not available. Source: 'OECD Main Economic Indicators' and 'Department of Employment Gazette'.

Table 5 **Consumer prices** All goods and services

Indices 1975 = 100

	Belgium	Luxem-bourg	Denmark	France	F.R. of Germany	Ireland	Italy	Nether-lands	United Kingdom	EEC [1]	Canada	United States	Japan	OECD [1]
1974	88.7	90.3	91.2	89.6	94.4	82.7	85.5	90.7	80.5	N.A.	90.3	91.6	89.4	N.A.
1975	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1976	109.2	109.8	109.0	109.6	104.5	118.0	116.8	108.8	116.5	110.0	107.5	105.8	109.3	109.0
1977	116.9	117.2	121.1	120.4	108.6	134.1	138.3	115.8	135.0	122.0	116.1	112.6	118.1	118.0
1976 1st quarter	106.1	106.7	104.0	105.8	103.2	110.7	108.1	105.1	110.8	N.A.	105.2	103.7	105.5	N.A.
2nd	108.2	109.0	108.2	108.3	104.7	117.6	115.0	108.6	114.9	N.A.	106.7	104.9	108.9	N.A.
3rd	110.2	110.8	109.8	110.8	104.9	119.3	118.2	109.4	117.6	N.A.	108.3	106.6	110.1	N.A.
4th	112.1	112.7	114.1	113.6	105.4	124.4	125.7	112.1	123.0	N.A.	109.9	107.8	112.8	N.A.
1977 1st quarter	114.3	115.3	115.3	115.4	107.3	129.1	131.6	113.0	129.2	N.A.	112.3	109.7	115.3	N.A.
2nd	116.2	117.1	119.0	118.9	108.8	134.0	136.6	115.8	134.9	N.A.	114.9	112.1	118.4	N.A.
3rd	117.9	117.9	121.9	121.7	109.0	135.4	140.1	116.6	137.0	N.A.	117.4	113.7	118.8	N.A.
4th	119.3	118.4	128.3	124.1	109.3	137.8	144.8	117.8	139.0	N.A.	119.9	115.0	119.8	N.A.
1978 1st quarter	120.8	119.2	129.9	126.0	110.7	139.8	148.5	118.2	141.4	127.0	122.1	116.9	120.3	124.0
2nd	121.3	120.5	132.0	129.6	111.7	142.2	153.2	119.9	145.3	130.8	125.1	119.9	122.7	127.0
1977 June	117.0	117.6	120.0	119.9	109.3		137.8	116.0	136.2	N.A.	115.7	112.8	118.4	N.A.
July	117.4	118.2	120.7	121.0	109.1		138.6	116.0	136.4	N.A.	116.8	113.3	118.1	N.A.
August	117.8	117.8	121.9	121.6	109.1	135.4	139.9	116.5	137.0	N.A.	117.3	113.7	118.1	N.A.
September	118.6	117.6	123.2	122.7	108.9		141.7	117.2	137.8	N.A.	118.0	114.1	120.2	N.A.
October	118.8	118.1	127.5	123.7	109.1		143.6	117.7	138.4	N.A.	119.1	114.5	120.8	N.A.
November	119.3	118.7	128.6	124.1	109.2	137.8	145.0	117.9	139.0	N.A.	119.9	115.0	119.4	N.A.
December	119.7	118.4	128.7	124.4	109.5		145.7	117.9	139.8	N.A.	120.7	115.4	119.1	N.A.
1978 January	120.3	119.0	129.2	125.0	110.2		146.9	117.5	140.6	126.0	121.2	116.1	119.6	123.0
February	120.8	119.2	129.8	126.0	110.8	139.8	148.4	118.0	141.4	127.0	121.9	116.9	120.1	124.0
March	121.1	119.6	130.7	127.1	111.1		150.3	119.0	142.3	128.0	123.3	117.7	121.2	125.0
April	121.2	120.2	131.2	128.4	111.4		151.8	119.8	144.4	129.0	123.6	118.7	122.5	126.0
May	121.4	120.4	132.3	129.7	111.7	142.2	153.2	120.0	145.2	130.0	125.3	119.9	123.2	127.0
June	121.4	120.8	132.6	130.7	112.0		154.5	119.9	146.3	130.0	126.4	121.2	122.5	128.0
July	122.1	121.0	132.9	132.3	112.0		155.4	120.8	147.0	131.0	128.3	122.0	123.0	129.0
August	122.6	121.1	133.5	133.0	111.7	146.6	156.0 e	121.4	147.9	132.0 e	128.4	122.7	123.1	130.0 e
Percentage change														
Latest month on same month a year earlier	4.1	2.8	9.5	9.4	2.4	8.2	11.5	4.2	8.0	7.1	9.4	7.9	4.2	8.4
Latest three months on previous three months	0.7	0.7	1.2	2.8	0.4	3.1	2.3	0.9	2.2	1.6	2.9	2.7	0.5	2.4
Latest three months on a year earlier	3.9	2.6	10.0	9.2	2.5	8.2	11.9	3.9	7.7	N.A.	9.5	7.7	3.9	N.A.

[1] The OECD and EEC indices, correct to one decimal place, will be published when available. e Estimated. N.A. – not available.
Source: 'OECD Main Economic Indicators'.

Table 8 **Exports** (fob) Special trade [1], seasonally adjusted

US $ million

	Belgium/ Luxembourg	Denmark [2]	France	F.R. of Germany	Ireland [2]	Italy	Nether-lands	United Kingdom [2]	EEC	Canada [3]	United States [2]	Japan [2,3]	OECD [3]
1970	11 592	3 288	17 940	34 188	1 032	13 188	11 772	19 382	112 356	16 134	43 224	19 320	220 045
1971	12 081	3 609	20 592	39 009	1 308	15 177	13 953	22 365	128 084	17 676	44 211	23 994	246 037
1972	15 995	4 330	25 739	46 208	1 610	18 535	15 392	24 415	153 152	20 184	49 676	28 591	290 784
1973	22 416	6 120	35 952	67 440	2 124	22 236	23 952	30 632	210 684	25 200	71 316	36 936	398 880
1974	25 260	7 716	45 900	89 160	2 628	30 288	32 436	38 827	275 100	32 784	98 508	55 536	532 932
1975	28 812	8 712	52 212	90 024	3 216	34 824	34 440	44 270	295 992	32 304	107 652	55 752	567 804
1976	32 844	9 108	55 812	102 036	3 312	36 924	38 748	46 542	325 044	38 628	114 996	67 224	630 492
1977	37 488	10 068	63 516	117 936	4 392	45 036	43 680	57 526	379 620	41 556	120 168	80 496	715 104
1976 1st quarter	7 404	2 120	13 272	23 280	740	8 475	8 907	11 474	75 618	9 099	27 219	15 564	147 309
2nd	7 746	2 225	13 851	24 609	818	8 862	8 883	11 452	78 165	9 543	28 660	16 467	153 129
3rd	8 217	2 340	14 007	26 148	837	9 414	9 909	11 523	82 507	9 822	29 384	17 037	160 668
4th	9 144	2 445	14 586	27 456	886	9 972	11 001	12 093	87 727	9 576	29 450	17 787	166 884
1977 1st quarter	9 069	2 532	15 108	27 897	962	10 467	10 623	12 977	89 492	10 359	29 786	19 479	171 558
2nd	9 123	2 357	15 252	28 788	1 014	11 481	10 536	14 292	92 571	10 179	30 574	19 710	175 752
3rd	9 261	2 526	16 242	29 541	1 200	10 971	11 220	14 950	96 152	10 374	30 609	20 181	180 465
4th	9 849	2 709	17 465	32 048	1 226	12 064	11 635	15 307	102 812	10 477	29 485	21 237	188 887
1978 1st quarter [p]	10 252	2 676	17 325	32 394	1 364	11 520	11 978	17 062	103 793	10 756	31 065 p	23 898	195 165 p
2nd	10 354	2 885	18 362	34 755	1 328	13 693	11 952	16 658	109 962	11 458		23 834	
3rd								18 505					
1977 January	3 005	836	5 085	9 202	309	3 450	3 577	4 347	29 770	3 300	9 807	6 566	(56 679)
February	2 934	824	4 992	9 147	322	3 409	3 620	4 293	29 504	3 349	9 904	6 428	(56 459)
March	3 130	872	5 031	9 548	331	3 608	3 427	4 336	30 218	3 710	10 075	6 486	(58 154)
April	3 023	838	4 977	9 276	330	3 825	3 584	4 698	30 426	3 447	10 102	6 758	(58 149)
May	2 990	723	5 173	9 603	331	3 804	3 489	4 642	30 646	3 321	10 398	6 400	(58 385)
June	3 109	796	5 101	9 909	352	3 853	3 465	4 951	31 499	3 411	10 074	6 552	(59 582)
July	2 978	818	5 162	9 482	397	3 549	3 666	5 021	31 097	(3 522)	10 246	(6 910)	(59 282)
August	2 989	846	5 411	9 861	397	3 850	3 844	4 823	32 170	(3 432)	9 479	(6 661)	(59 806)
September	3 293	861	5 670	10 199	405	3 571	3 709	5 106	32 885	(3 336)	10 884	(6 565)	(61 438)
October	3 083	835	5 765	10 369	345	3 548	3 670	5 017	32 724	3 453	9 174	6 773	59 840
November	3 173	890	5 488	10 197	418	3 999	3 776	4 898	33 268	3 074	9 093	7 145	60 620
December	3 593	984	6 212	11 482	463	4 517	4 189	5 392	36 820	3 950	11 218	7 319	68 427
1978 January [p]	3 641	885	5 650	10 942	493	3 717	4 044	5 363	34 455	3 252	10 144 p	7 784	64 233 p
February	3 228	947	5 724	10 772	417	3 962	4 083	5 031	34 822	3 939	10 030 p	8 154	65 606 p
March	3 383	844	5 951	10 680	454	3 841	3 851	5 668	34 516	3 565	10 891 p	7 960	65 326 p
April	3 683	998	6 467	12 108	466	4 881	4 084	5 642	38 081	4 373		7 857	
May	3 319	891	5 820	10 354	412	4 478	3 958	5 469	34 615	3 564		7 994	
June	3 352	996	6 075	12 293	450	4 334	3 910	5 547	37 266	3 521		7 983	
July		878	6 504	10 664	457			6 020		3 567			
August								6 185					
September								6 300					

[1] See notes to table 9.

Source: United Kingdom. Department of Trade; all others: 'OECD Series "A" '.

Table 9 **Imports** (cif) Special trade [1], seasonally adjusted

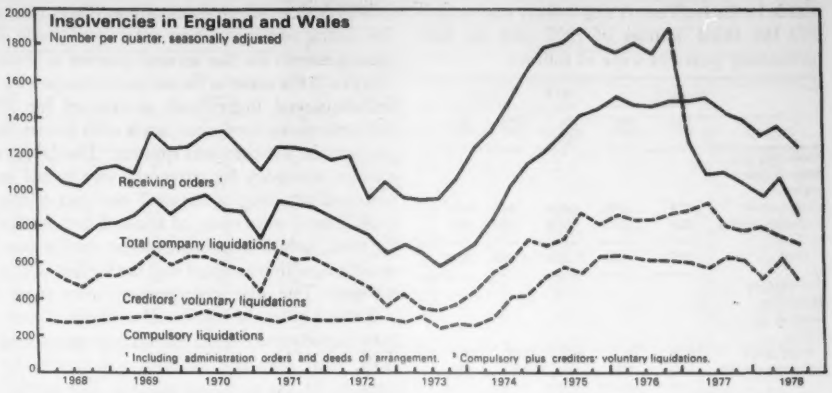
US $ million

	Belgium/ Luxembourg	Denmark [2]	France	F.R. of Germany	Ireland [2]	Italy	Nether-lands	United Kingdom [2]	EEC	Canada [2,4]	United States [2,4]	Japan [3]	OECD [3]
1970	11 352	4 380	19 116	29 808	1 572	14 940	13 392	21 696	116 280	13 308	39 960	18 876	225 649
1971	12 390	4 476	21 261	34 356	1 838	16 026	15 159	23 918	129 403	15 460	45 633	19 716	250 717
1972	14 879	4 988	26 696	39 759	2 113	19 252	17 127	27 877	152 643	18 924	55 819	23 463	297 984
1973	21 936	7 704	37 380	54 492	2 784	27 816	24 360	38 872	215 232	23 304	69 120	38 316	410 820
1974	29 700	9 852	52 824	68 976	3 816	40 968	33 204	54 344	293 568	32 292	100 968	62 112	583 020
1975	30 708	10 332	54 240	74 208	3 804	38 364	35 148	53 618	300 048	33 960	96 936	57 864	587 376
1976	35 352	12 420	64 392	87 780	4 200	43 368	39 948	56 269	343 428	37 956	121 788	64 800	676 308
1977	40 248	13 260	70 488	100 704	5 388	47 556	45 600	63 740	386 940	39 540	147 852	70 812	765 936
1976 1st quarter	7 656	2 823	14 925	19 836	999	9 984	8 826	13 335	78 602	9 249	27 308	14 946	154 935
2nd	7 995	3 000	15 495	20 967	994	10 644	9 378	13 942	82 413	9 567	29 290	15 546	162 039
3rd	8 427	3 165	16 413	22 475	1 068	10 737	10 086	14 386	86 680	9 582	32 024	16 863	173 049
4th	9 174	3 330	17 493	24 078	1 121	11 859	11 607	14 606	93 334	9 486	32 652	17 256	182 874
1977 1st quarter	9 513	3 317	17 409	24 170	1 258	11 781	11 292	15 322	94 292	9 885	35 405	17 664	186 291
2nd	9 483	3 240	17 196	24 116	1 271	12 276	11 214	16 429	95 020	10 119	37 721	17 484	190 467
3rd	9 414	3 385	17 721	25 593	1 422	11 010	11 514	15 779	95 811	9 948	37 600	17 832	192 681
4th	10 143	3 344	18 658	27 435	1 481	12 458	11 816	16 210	101 804	9 840	37 640	18 099	198 207
1978 1st quarter [p]	11 066	3 411	19 018	28 054	1 551	11 637	12 317	19 023	105 698	9 694	40 778	18 444	205 014
2nd	10 844	3 530	19 609	28 977	1 720	13 147	12 636	18 683	108 909	11 202	43 200	18 840	
3rd								20 242					
1977 January	3 204	1 087	5 912	8 220	443	3 821	3 846	5 520	32 116	3 243	11 371	6 009	(62 340)
February	3 102	1 038	5 702	7 834	406	4 008	3 807	4 872	30 794	3 319	11 697	5 732	(61 084)
March	3 206	1 192	5 796	8 116	410	3 950	3 637	4 930	31 382	3 321	12 337	5 922	(62 727)
April	3 150	1 022	5 515	7 745	406	4 167	3 727	5 183	30 872	3 425	12 593	5 859	(62 469)
May	3 171	1 085	5 740	8 170	426	4 206	3 727	5 394	31 863	3 391	12 334	5 850	(63 156)
June	3 161	1 134	5 943	8 201	439	3 902	3 761	5 851	32 285	3 302	12 793	5 775	(64 805)
July	3 854	1 073	5 692	8 606	461	3 700	3 788	5 475	31 510	(3 328)	12 781	(5 788)	(63 948)
August	3 390	1 137	6 052	8 393	468	3 736	3 963	4 936	32 140	(3 257)	12 167	(6 067)	(64 539)
September	3 171	1 175	5 975	8 594	493	3 574	3 762	5 369	32 161	(3 267)	12 652	(5 856)	(64 079)
October	3 148	1 089	5 944	8 557	472	4 144	3 741	5 337	32 562	3 268	11 954	5 769	63 591
November	3 390	1 092	6 429	8 773	477	3 910	3 911	4 998	33 321	2 961	11 581	6 006	64 162
December	3 605	1 163	6 285	10 105	532	4 404	4 164	5 875	35 921	3 611	14 105	6 324	70 454
1978 January [p]	3 723	1 147	6 503	9 824	582	3 700	4 171	6 334	35 935	3 024	12 582	6 234	68 122
February	3 719	1 134	6 137	9 252	505	4 035	4 202	6 126	34 776	3 711	14 848	6 311	69 989
March	3 624	1 130	6 378	8 978	464	3 902	3 944	6 563	34 987	2 959	13 348	5 899	66 903
April	3 593	1 184	6 724	10 104	528	4 562	4 410	5 596	36 408	4 275	15 328	6 549	73 360
May	3 685	1 166	6 491	9 050	593	4 672	4 237	6 608	36 429	3 403	14 165	6 576	70 959
June	3 566	1 180	6 394	9 823	599	3 913	3 989	6 479	36 072	3 524	13 707	5 715	
July		1 117	6 534	9 408	590			6 558		3 696	15 643		
August								6 601					
September								7 083					

[1] For most purposes special trade may be defined as trade excluding re-exports. [2] General trade. [3] The OECD has revised the seasonally adjusted figures. It has been possible to include only the published revisions at this stage. For this reason the monthly figures in brackets do not necessarily add to the quarters. [4] fob. [5] In these tables, from January 1978, the trade of Ireland and the United Kingdom is classified according to SITC Rev 2. The changes are described in an article in 'Trade and Industry' 10 February 1978, which also gives for the UK an indication of the magnitude of the change. It is thought that other countries have also adopted this classification from the beginning of 1978, but the extent of the discontinuity has not been ascertained. Percentage changes may be misleading and have therefore been omitted. p Provisional.

Source: United Kingdom, Department of Trade; All others: 'OECD Series "A" '

Insolvencies in England and Wales: third quarter 1978



Company liquidations and receiving orders both fell in the third quarter of 1978, more than offsetting the rises in the previous quarter and continuing the general downward trend since about mid-1977.

Table 1 shows that, on a seasonally adjusted basis, total company liquidations, which had risen from about 1310 to about 1360 between the first and second quarters of 1978, fell to about 1240 in the third quarter. The fall took place in both compulsory liquidations and creditors' voluntary liquidations. Compulsory liquidations fell to about 530 in the third quarter compared with about 590 in the previous quarter and about 510 in the quarter before that. Creditors' voluntary liquidations fell to about 710 in the third quarter compared with about 770 in the previous quarter and about 800 in the quarter before that. Before seasonal adjustment there were 976 company liquidations in the third quarter of 1978 made up of 276 compulsory liquidations and 700 creditors' voluntary liquidations. The total is about 13 per cent less than a year earlier, with compulsory liquidations about 18 per cent less and creditors' voluntary liquidations about 11 per cent less.

Table 1 also shows, on a seasonally adjusted basis, that receiving orders (including administrative orders and deeds of arrangement) fell to about 850 in the third quarter of 1978, after rising from about 950 in the first quarter to about 1050 in the second quarter. Before seasonal adjustment there were 774 receiving orders (including administrative orders and deeds of arrangement) in the third quarter of 1978, about 23 per cent less than a year earlier.

The chart illustrates the changes in the number of insolvencies, seasonally adjusted, in each quarter over the last 10 years. Company liquidations and receiving orders (including administration orders and deeds of arrangement) both reached a trough at much the same time in mid-1973, subsequently rising steadily to historically very high levels in 1975 and 1976. Both types of insolvency then fell, company liquidations fairly sharply from the third quarter of 1977, receiving orders abruptly from the first quarter of 1977. Much, if not all, the fall in receiving orders in the first half of 1977 was caused by increases in monetary limits in bankruptcy proceedings and in deposits on bankruptcy petitions, which came into effect in December 1976 (see the notes at the end of this article), and it is probable that the underlying fall in receiving orders did not begin until later in 1977. There were no such complications for company liquidations. It can be seen that, for both types of insolvency, the falls in the latest quarter represent a continuation of a generally downward trend since about mid-1977.

High court and county court figures

The numbers of receiving and administration orders and of compulsory winding-up orders

Table 1 Insolvencies

England and Wales — Number

	Bankruptcies					Company liquidations					
	Unadjusted				Seasonally adjusted	Unadjusted			Seasonally adjusted		
	Total	Receiving orders	Administration orders	Deeds of arrangement	Total	Total	Compulsory	Creditors' voluntary	Total	Compulsory	Creditors' voluntary
1968	4 298	4 123	27	148		3 165	1 108	2 057			
1969	4 772	4 532	20	220		3 510	1 181	2 329			
1970	5 087	4 878	29	180		3 689	1 269	2 420			
1971	4 793	4 630	13	150		3 506	1 166	2 340			
1972	4 337	4 225	19	93		3 063	1 150	1 913			
1973	3 917	3 805	12	100		2 575	1 080	1 495			
1974	5 718	5 595	13	110		3 720	1 395	2 325			
1975	7 271	7 123	20	128		5 398	2 287	3 111			
1976	7 207	7 089	19	99		5 939	2 511	3 428			
1977	4 485	4 388	15	82		5 831	2 425	3 406			
1968											
1st qtr	1 231	1 190		41	1 121	897	307	590	850	287	563
2nd	1 024	985		39	1 040	775	279	496	772	271	501
3rd	932	907		25	1 020	586	148	438	731	270	461
4th	1 111	1 068		43	1 117	907	374	533	812	280	532
1969											
1st qtr	1 231	1 173		58	1 135	872	318	554	824	296	528
2nd	1 095	1 055		40	1 094	871	308	563	864	298	566
3rd	1 215	1 157		58	1 319	798	171	627	957	305	652
4th	1 231	1 167		64	1 224	969	384	585	865	282	583
1970											
1st qtr	1 314	1 273		41	1 236	981	318	663	942	305	637
2nd	1 321	1 280		41	1 308	966	339	627	971	335	636
3rd	1 219	1 174		45	1 324	744	169	575	893	303	590
4th	1 233	1 180		53	1 219	998	443	555	883	326	557
1971											
1st qtr	1 171	1 145		26	1 110	760	310	450	730	297	433
2nd	1 253	1 205		48	1 237	945	285	660	942	275	667
3rd	1 137	1 092		45	1 233	777	172	605	925	308	617
4th	1 232	1 201		31	1 213	1 024	399	625	909	286	623
1972											
1st qtr	1 222	1 197		25	1 166	877	291	586	855	284	571
2nd	1 200	1 175		25	1 187	799	293	506	799	284	515
3rd	866	844		22	945	614	160	454	753	291	462
4th	1 049	1 028		21	1 039	773	406	367	656	291	365
1973											
1st qtr	1 011	982		29	954	710	273	437	700	271	429
2nd	952	919		33	941	653	308	345	655	302	353
3rd	875	858		17	955	463	130	333	579	241	338
4th	1 079	1 058		21	1 067	749	369	380	641	266	375
1974											
1st qtr	1 322	1 296		26	1 230	713	264	449	701	258	443
2nd	1 341	1 314		27	1 329	844	309	535	847	297	550
3rd	1 377	1 355		22	1 500	829	224	605	1 023	415	608
4th	1 678	1 643		35	1 659	1 334	598	736	1 149	425	724
1975											
1st qtr	1 938	1 900		38	1 782	1 238	540	698	1 218	525	693
2nd	1 816	1 783		33	1 807	1 317	593	724	1 311	580	731
3rd	1 719	1 693		26	1 888	1 138	279	859	1 417	541	876
4th	1 798	1 767		31	1 794	1 705	875	830	1 452	641	811
1976											
1st qtr	1 921	1 891		30	1 758	1 554	687	867	1 514	646	868
2nd	1 807	1 785		22	1 807	1 490	653	837	1 471	631	840
3rd	1 592	1 571		21	1 750	1 150	324	826	1 462	619	843
4th	1 887	1 861		26	1 892	1 745	847	898	1 492	615	877
1977											
1st qtr	1 373	1 350		23	1 259	1 542	653	889	1 497	605	892
2nd	1 092	1 067		25	1 096	1 533	602	931	1 511	579	932
3rd	1 002	980		22	1 105	1 125	336	789	1 440	638	802
4th	1 018	1 006		12	1 025	1 631	834	797	1 383	603	780
1978											
1st qtr	1 043	1 028		15	951	1 346	549	797	1 313	510	803
2nd	1 050	1 028		22	1 052	1 379	610	769	1 362	592	770
3rd	774	762		12	851	976	276	700	1 240	529	711

made in the high court and county courts during the third quarter of 1978 and the four preceding quarters were as follows:

	1977		1978		
	3rd qtr	4th qtr	1st qtr	2nd qtr	3rd qtr
Receiving and administration orders:					
High court	374	445	424	460	268
County courts	606	561	604	568	494
Total	980	1 006	1 028	1 028	762
Compulsory liquidation winding-up orders:					
High court	226	710	450	508	188
County courts	110	124	99	102	88
Total	336	834	549	610	276

Industrial analysis

Table 2 gives the industrial analysis of receiving orders administered (including administration orders and deeds of arrangement) up to the second quarter of 1978. This table excludes orders that were rescinded before the business of the debtor could be investigated and deeds that were voided; the figures therefore do not agree with those in table 1, which are for all receiving orders, administration orders and deeds of arrangement made. The data vary from quarter to quarter though there is a tendency for certain groups, eg construction, always to form a large proportion of the total. The compilation of the data for the fourth quarter of each year differs from that for the first three quarters. For this reason, it is preferable to avoid comparison between the analysis for the fourth quarter of 1977 and the analyses in table 2 for the other quarters.

The industrial analysis of receiving orders (including administration orders and deeds of arrangement) for the second quarter of 1978 was much the same as for the previous quarter. Self-employed individuals accounted for 70 per cent of the total compared with about 74 per cent in the previous quarter. The largest change, category by category, was a fall in non-food retailing of about 3 per cent of the total. There were rises, of about 2 per cent of the total, in hotels and restaurants and in construction, which as usual was the largest single category. The other changes were very small.

Table 3 gives the industrial analysis of company liquidations up to the second quarter of 1978. Here also the analysis was much the same as for the previous quarter. The largest change was a rise in road haulage of about 2 per cent of the total. The largest falls were in wholesaling of non-consumer goods and in construction, both of about 1½ per cent of the total, though as usual construction remained the largest single category. The other changes were very small.

Small changes in the industrial analyses should not necessarily be regarded as significant, if only because of the difficulty of making precise industrial classification in many cases and the erratic nature of the series.

Notes

An article describing these statistics and giving quarterly figures from the beginning of 1960 to the end of 1974 (with industrial analyses from the beginning of 1969 to the third quarter of 1974) was published in *Economic Trends* for March 1975.

The figures for bankruptcies in table 1 refer to persons, who are dealt with under the Bankruptcy Act 1914 and the Bankruptcy (Amendment) Act 1926 or who make arrangements with their creditors under the Deeds of Arrangement Act 1914. A receiving order is made by the court on the petition of a creditor if it is satisfied that the debtor has committed an act of bankruptcy, as listed in section 1 of the Bankruptcy Act 1914, or on the petition of the debtor himself. The order makes the official receiver, who is an officer of the court, receiver of the debtor's estate and deprives the debtor of the right to deal with it. Administration orders, which are made under section 130 of the Bankruptcy Act 1914, relate to deceased insolvents. Deeds of arrangement relate to arrangements between debtors and creditors that are reached, without recourse to the courts, under the Deeds of Arrangement Act 1914.

Insolvent partnerships are dealt with under the bankruptcy acts and are included in the figures for receiving orders in table 1. A single receiving order may be made against a partnership or receiving orders may be made against partners individually, when each is included in table 1. If separate receiving orders are made, they are consolidated before being proceeded with and appear as a single receiving order in table 2.

Receiving orders administered, referred to in table 2, are those receiving orders not consolidated or rescinded before the end of the year. For the first three quarters of the year, the industrial analysis in table 2 is compiled about two months after the end of the quarter, to allow time for the statistics to be collected. Some of these receiving orders may later be rescinded. The analysis for the fourth quarter is obtained by subtracting the figures for the first three quarters from the figures for the full year. The industrial analysis for the full year takes account of revisions to the figures for the first three quarters and these are reflected in the analysis for the fourth quarter. It is therefore not appropriate to compare the industrial analysis for the fourth quarter with the analysis for the earlier quarters of the year.

Insolvent companies are dealt with under the Companies Acts 1948 and 1967 and the figures for company liquidations in table 1 refer to the two types of liquidation that involve insolvency. The figures for compulsory liquidations relate to winding-up orders made by the courts. The figures for creditors' voluntary liquidations, in which the company and its creditors come to terms without court proceedings, relate to notifications of resolutions to wind up. There is a third type, members' voluntary liquidations: these do not involve insolvency and they are not included in the figures in this article.

The Insolvency Act 1976 changed some aspects of the law relating to both bankruptcy and company liquidation. Its provisions include an increase in the minimum debt to support a creditor's petition for bankruptcy from £50 to £200; and under an amendment to the Bankruptcy Rules 1952, the deposits required on bankruptcy petitions were increased from £5 to £50 for debtors' petitions and from £7.50 to £90 for creditors' petitions. These changes have had a substantial effect on the number of bankruptcy petitions, and hence on the number of receiving orders, from the beginning of 1977.

There is considerable seasonal variation between quarters in the insolvency series, mainly because about 40 per cent of all receiving orders and about 80 per cent of all compulsory liquidations are dealt with by the High Court, which has fewer sittings in the third quarter compared with other quarters because of the long vacation. For receiving orders, the seasonal fall in the third

Table 2 Industrial analysis of receiving orders administered [1]

England and Wales

	Numbers							Percentages						
			1977			1978				1977			1978	
Industry	1976	1977	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr	1976	1977	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr
Self-employed														
Agriculture	135	72	18	14	21	21	9	2.0	1.7	2.1	1.7	1.5	2.4	1.0
Manufacturing:														
Food, drink and tobacco	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chemicals	—	2	—	—	2	—	—	—	—	—	—	0.1	—	—
Metals and engineering	65	43	8	8	25	12	8	1.0	1.0	0.9	1.0	1.8	1.3	0.9
Textiles and clothing	44	32	10	8	13	6	3	0.6	0.8	1.2	1.0	0.9	0.7	0.3
Timber and furniture	31	24	1	1	17	2	7	0.5	0.6	0.1	0.1	1.2	0.2	0.8
Paper, printing and publishing	29	16	1	4	9	1	2	0.4	0.4	0.1	0.5	0.7	0.1	0.2
Other manufacturing	16	13	1	3	8	—	1	0.2	0.3	0.1	0.4	0.6	—	0.1
Total manufacturing	185	130	21	24	74	21	21	2.7	3.1	2.4	2.9	5.4	2.4	2.3
Construction	1 564	986	219	179	361	192	210	23.0	23.6	25.3	21.7	26.3	21.5	23.3
Road haulage	405	252	51	47	107	51	42	6.0	6.0	5.9	5.7	7.8	5.7	4.7
Wholesaling:														
Consumer goods	77	44	10	4	19	3	9	1.1	1.1	1.2	0.5	1.4	0.3	1.0
Non-consumer goods	60	62	13	9	22	20	9	0.9	1.5	1.5	1.1	1.6	2.2	1.0
Retailing:														
Food	382	273	58	58	96	61	55	5.6	6.5	6.7	7.0	7.0	6.8	6.1
Non-food	764	517	97	112	171	113	88	11.2	12.4	11.2	13.6	12.4	12.7	9.8
Financial and professional services	317	213	35	41	85	34	36	4.7	5.1	4.1	5.0	6.2	3.8	4.0
Hotels and restaurants	358	239	51	49	80	58	77	5.3	5.7	5.9	6.0	5.8	6.5	8.6
Garages	249	175	27	29	90	36	40	3.7	4.2	3.1	3.5	6.5	4.0	4.4
Other consumer services	233	152	26	30	59	41	29	3.4	3.6	3.0	3.6	4.3	4.6	3.2
Other industries	69	36	6	7	12	9	5	1.0	0.9	0.7	0.9	0.9	1.0	0.6
Total	4 798	3 151	632	603	1 197	660	630	70.6	75.4	73.1	73.3	87.1	74.0	70.0
Other individuals														
Employees, no occupation and unemployed	1 467	625	172	151	—	171	176	21.6	15.0	19.9	18.3	—	19.2	19.6
Directors and promoters of companies	430	357	47	58	178	47	68	6.3	8.5	5.4	7.0	12.9	5.3	7.6
Occupation unknown	101	44	13	11	—	14	26	1.5	1.1	1.5	1.3	—	1.6	2.9
Total	1 998	1 026	232	220	178	232	270	29.4	24.6	26.9	26.7	12.9	26.0	30.0
All receiving orders administered	6 796	4 177	864	823	1 375	892	900	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Receiving orders made during the year, less those consolidated or rescinded before the end of the year, together with administration orders and deeds of arrangement on the same basis. The totals for all receiving orders administered are thus not equal to the totals shown in table 1. The construction of the quarterly figures is explained in the notes at the end of the article.

Table 3 **Industrial analysis of total compulsory and creditors' voluntary liquidations.**
England and Wales

Industry	Numbers							Percentages						
			1977			1978				1977			1978	
	1976	1977	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr	1976	1977	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr
Agriculture	25	25	7	3	8	8	7	0.4	0.4	0.5	0.3	0.5	0.6	0.5
Manufacturing:														
Food, drink and tobacco	54	38	18	2	11	8	15	0.9	0.7	1.2	0.2	0.7	0.6	1.1
Chemicals	48	31	14	2	10	6	8	0.8	0.5	0.9	0.2	0.6	0.4	0.6
Metals and engineering	419	343	88	94	76	72	88	7.1	5.9	5.7	8.4	4.7	5.3	6.4
Textiles and clothing	257	239	58	59	56	63	49	4.3	4.1	3.8	5.2	3.4	4.7	3.6
Timber and furniture	121	128	36	29	36	33	29	2.0	2.2	2.3	2.6	2.2	2.5	2.1
Paper, printing and publishing	163	136	42	35	30	33	28	2.7	2.3	2.7	3.1	1.8	2.5	2.0
Other manufacturing	257	264	71	75	60	67	62	4.3	4.5	4.6	6.7	3.7	5.0	4.5
Total manufacturing	1 319	1 179	327	296	279	282	279	22.2	20.2	21.3	26.3	17.1	21.0	20.2
Construction	977	1 004	258	176	314	242	229	16.5	17.2	16.8	15.6	19.3	18.0	16.6
Road haulage	273	256	59	47	95	51	81	4.6	4.4	3.8	4.2	5.8	3.8	5.9
Wholesaling:														
Consumer goods	191	291	65	46	107	68	64	3.2	5.0	4.2	4.1	6.6	5.1	4.6
Non-consumer goods	237	185	50	41	43	34	14	4.0	3.2	3.3	3.6	2.6	2.5	1.0
Retailing:														
Food	113	96	24	21	20	33	30	1.9	1.6	1.6	1.9	1.2	2.5	2.2
Non-food	626	692	181	103	205	188	208	10.5	11.9	11.8	9.2	12.6	14.0	15.1
Financial and professional services	904	723	156	104	254	213	212	15.2	12.4	10.2	9.2	15.6	15.8	15.4
Hotels and restaurants	161	144	32	38	39	39	49	2.7	2.5	2.1	3.4	2.4	2.9	3.6
Garages	118	108	28	24	24	24	35	2.0	1.9	1.8	2.1	1.5	1.8	2.5
Other consumer services	489	506	132	78	153	98	97	8.2	8.7	8.6	6.9	9.4	7.3	7.0
Other industries	506	622	214	148	90	66	74	8.5	10.7	14.0	13.2	5.5	4.9	5.4
Total	5 939	5 831	1 533	1 125	1 631	1 346	1 379	100.0	100.0	100.0	100.0	100.0	100.0	100.0

quarter is made up mainly in the following first quarter. Compulsory liquidations are more strongly seasonal, with a large fall in the third quarter followed by a large rise in the fourth. Creditors' voluntary liquidations are not particularly seasonal but seasonally adjusted figures for them are included in table 1.

Questions are often asked about the distribution of insolvencies by size or by region but it would be impracticable or very costly to compile statistics of this sort. There is no satisfactory measure of the size of an insolvency because a business tends to decline over a period and there are the problems of deciding for what time the size should be assessed and what measure should be used, and of obtaining this information retrospectively.

For regional statistics of bankruptcy, figures for receiving orders dealt with in the various courts provide some basis because cases are transferred to the court for the area in which the debtor lives or has his place of business. Annnual figures for receiving orders analysed by court are given in the bankruptcy general annual report and quarterly figures so analysed are given in the *London Gazette*. Regional statistics of company liquidations cannot be obtained in this way, because of the large proportion of cases dealt with by the High Court. There is also the difficulty that, although the address of the company's registered office may be known, the activities of the company are often located elsewhere and often extend over a wide area.

Inquiries: Economics and Statistics Division 6a, Departments of Industry, Trade and Prices and Consumer Protection, Room 248, 1 Victoria Street, London SW1H 0ET, tel. 01-215 5538.

Index of average earnings in August

Average earnings of employees in Great Britain are estimated to have risen by 13.8 per cent between August 1977 and August 1978. This estimate is based on the monthly index for the whole economy, covering in total about 21 million employees, which was introduced from January 1976 (see table 1).

In the production and certain other industries (table 2), employing in total about 11 million employees, and covered by the older series index introduced from January 1963, earnings increased by about 15.7 per cent over the 12 months to August.

Indices of basic rates of wages

At the end of September 1978, nationally-negotiated basic weekly rates of wages of manual workers were on average 16.0 per cent higher than a year earlier. During September, the index of basic weekly rates remained at 265.6. Recent figures are shown below.

The indices only take account of changes in nationally-negotiated rates. The year-on-year increases consequently reflect that new national rates for engineering workers became effective in April 1978 after remaining unchanged from February 1976.

Inquiries: Watford 28500 ext. 319.

Table 1 **Index of average earnings of employees in Great Britain**
Whole economy (new) series, not seasonally adjusted

	Index Jan 1976 = 100	Percentage increase over 12 months
1977		
July	117.0	8.5
August	115.7	7.3
September	116.6	7.7
October	117.9	8.7
November	120.1	8.6
December	121.7	9.4
1978		
January	121.5	9.5
February	122.7	10.5
March	125.0	10.4
April	127.2	12.4
May	129.4	12.6
June	133.1	15.4
July	133.6	14.2
August p	131.6	13.8

p Provisional.

Table 2 **Index of average earnings in production industries and some services** [1]
Older series

	Seasonally adjusted			Un-adjusted
	Index January 1970 = 100	Percentage increase Over previous month	Over previous 12 months	index January 1970 = 100
1978				
January	306.3	0.5	10.2	306.5
February	311.2	1.6	11.5	311.0
March	314.8	1.2	11.2	317.3
April	325.7	3.4	14.8	325.9
May	327.2	0.4	14.5	330.9
June	334.0	2.1	16.6	336.6
July	332.7	−0.4	16.2	338.0
August p	332.9	0.0	15.7	332.5

p Provisional.
[1] Transport and communication (other than sea transport and postal services) and some miscellaneous services.

	Indices, 31 July 1972 = 100		Percentage increase over previous 12 months	
	Basic weekly rates	Basic hourly rates	Basic weekly rates	Basic hourly rates
1978				
30 April	258.4	259.9	15.0	15.0
31 May	259.7	261.3	15.2	15.2
30 June	263.3	264.9	15.8	15.8
31 July	264.7	266.3	16.0	16.0
31 August	265.6	267.2	16.1	16.1
30 September	265.6	267.2	16.0	16.0

Investments of insurance companies and private sector pension funds.

Because of space requirements, the two articles on the investments of insurance companies and private sector pension funds have been held over to next week (10 November).

Index of industrial production for Wales: marked rise in second quarter

The index of industrial production for Wales in the second quarter of 1978 at 109.4 (1970 = 100) showed a marked increase (7 per cent) over the first quarter of this year. The second quarter figures are, however, provisional, and may need to be revised when more information becomes available.

The all-manufacturing industries index also rose by 7 per cent to 114.9. The main contribution to this rise in output was ferrous metals (18 per cent); the important engineering sector also registered a 5 per cent rise. Significant rises in output outside the engineering sector were also recorded in paper, printing and publishing (14 per cent) and in other manufacturing industries (11 per cent). The only fall was recorded by mechanical and instrument engineering, and that was limited to 1 per cent. Construction output is provisionally estimated to have risen by 15 per cent over the quarter.

Comparing the results for the second quarter this year with those of a year earlier, a similar pattern emerges. Both the all industries and all manufacturing industries indices were up by 9 per cent. Iron and steel manufacture was 29 per cent higher than the level achieved in the second quarter of last year, though non-ferrous metal production remains 8 per cent below the level of the second quarter of 1977. The index for the engineering sector as a whole was 11 per cent higher than a year earlier, production of vehicles being 24 per cent up. Rises in construction (9 per cent) and the utilities (11 per cent) also contributed significantly to the increase in the all-industries index.

On a market sector basis, as shown in table 2, the consumer and intermediate goods sectors registered notable increases over the quarter whilst the output of investment goods rose only marginally. On a longer term comparison there was a 13 per cent rise in consumer goods output compared with the second quarter of 1977 and a 10 per cent improvement in the production of investment goods; the index for the important intermediate goods sector also rose, by 7 per cent, over this period.

Inquiries: Cardiff (0222) 42661 ext. 26.

Table 1 Index of industrial production for Wales [1]

seasonally adjusted 1970 = 100

Market sector	1970 weights per thousand	Annual indices		Quarterly indices 1977				1978		Percentage change over previous	
		1976	1977	1st qtr	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr p	Qtr	Year
Total: all industries	1 000	104.7	103.3	106.0	100.6	105.3	101.3	102.1	109.4	7	9
Mining and quarrying	85	66	62	62	62	62	62	60	60	1	−3
Total: all manufacturing industries	701	111.3	109.1	113.7	105.2	111.1	106.5	107.7	114.9	7	9
Food, drink and tobacco	40	155	148	152	151	144	143	145	148	2	−2
Coal and petroleum products	37	101	89	97	86	88	86	89	91	3	6
Chemicals and allied industries	47	156	163	172	162	161	158	160	166	4	3
Metal manufacture: total	199	83	75	84	68	79	70	71	82	15	19
Ferrous	167	74	68	76	60	74	64	65	77	18	29
Non-ferrous	33	128	109	122	113	103	98	99	104	5	−8
Engineering and allied industries: total	222	119	121	122	117	124	121	124	130	5	11
Mechanical and instrument engineering	61	103	109	108	107	112	108	109	108	−1	1
Electrical engineering	56	159	164	161	164	166	164	171	180	5	10
Vehicles (including aircraft and ships)	65	112	111	114	98	117	113	115	122	6	24
Metal goods not elsewhere specified	39	96	98	101	99	97	93	96	108	12	9
Textiles, leather and clothing	59	94	89	89	88	92	87	91	93	2	6
Bricks, pottery, glass, cement, etc	20	131	140	142	136	139	142	137	144	5	6
Timber, furniture etc	13	143	139	152	127	138	138	129	129	0	2
Paper, printing and publishing	31	88	87	88	85	84	90	79	90	14	6
Other manufacturing industries	32	157	159	163	154	166	152	150	166	11	8
Construction	146	78	79	76	79	82	79	76	87	15	9
Gas, electricity and water	58	142	147	146	148	150	145	155	163	6	11

[1] Small revisions to the series (going back to the start of the previous year) are normally made each quarter to take account both of more recent information and improved seasonal adjustment factors. p Provisional.
Source: Welsh Office.

Table 2 Index of industrial production for Wales: market sector analysis [1] [2]

seasonally adjusted 1970 = 100

Market sector	1970 [1] weights per thousand	Annual indices		Quarterly indices 1977				1978		Percentage change over previous	
		1976	1977	1st qtr	2nd qtr	3rd qtr	4th qtr	1st qtr	2nd qtr	Qtr	Year
Consumer goods sector	137	142.1	140.7	144.7	136.1	141.8	140.3	140.8	153.2	9	13
Intermediate goods sector	594	99.0	95.2	99.8	93.3	95.8	91.9	93.5	99.7	7	7
Investment goods sector	123	122.4	130.2	127.5	124.2	135.1	134.1	134.5	136.0	1	10

[1] See footnote [1] of table 1. [2] Construction industry (weight 146) is excluded from this analysis. Source: Welsh Office.

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Letters to the editor

Letters to the editor should be addressed to the Editor, *Trade and Industry*, Room 437, 1 Victoria Street, London SW1H 0ET, and *not* to HMSO.

Made-up clothing: orders and deliveries in July

In the three months ended July 1978 deliveries by the clothing industry were provisionally estimated to have been 4 per cent lower than in the preceding three months while net new orders were 6 per cent lower. Orders-on-hand at the end of July 1978 were 2 per cent lower than the end-April 1978 level. (These comparisons are based on the seasonally adjusted series in the accompanying tables).

In using the index numbers shown in the table, it should be borne in mind that, when price increases are large, the various problems associated with constructing a constant value series become more acute. Because of these difficulties the relative accuracy of the estimates is likely to have been reduced in recent years.

All indices have been rebased from 1970=100 to 1975 = 100.

Inquiries: 01-212 0116.

Made-up clothing
Index numbers of total orders and deliveries

	Orders-on-hand (end period)		Net new orders		Deliveries	
	December 1974 = 100		Average 1975 Deliveries = 100		Average 1975 Deliveries = 100	
1973	110		108		102	
1974	100		100		100	
1975	98		103		100	
1976	92		102		98	
1977	96		107		104	
	Actual	Seasonally adjusted	Actual	Seasonally adjusted	Actual	Seasonally adjusted
1973						
1st qtr	102	107	111	113	102	100
2nd	123	113	119	111	102	104
3rd	105	114	89	106	100	101
4th	110	108	115	104	107	104
1974						
1st qtr	116	121	98	101	95	94
2nd	120	110	107	99	99	102
3rd	95	103	84	99	101	101
4th	100	99	111	102	105	103
1975						
1st qtr	112	116	103	109	103	106
2nd	115	106	116	105	100	100
3rd	88	95	83	97	97	97
4th	98	97	110	102	100	98
1976						
1st qtr	90	93	96	97	99	98
2nd	114	104	113	105	96	99
3rd	87	93	87	102	98	97
4th	92	91	110	102	101	98
1977						
1st qtr	101	105	110	110	105	104
2nd	108	99	107	99	100	104
3rd	91	97	97	111	104	103
4th	96	94	113	107	107	106
1978						
1st qtr p	92	96	102	107	101	104
2nd p	107	99	111	100	98	99
1977						
Jan	99	102	98	113	93	104
Feb	98	103	110	106	111	105
Mar	101	105	121	110	111	102
Apr	106	104	115	105	100	104
May	113	100	118	89	101	102
Jun	108	99	87	104	99	107
Jul	97	96	94	119	105	105
Aug	91	96	82	109	93	102
Sep	91	97	116	105	115	101
Oct	91	95	126	98	123	104
Nov	95	94	116	97	107	101
Dec	96	94	97	126	91	112
1978						
Jan p	92	95	87	102	90	101
Feb p	89	94	106	104	108	103
Mar p	92	96	114	114	106	108
Apr p	100	98	127	107	106	101
May p	113	100	121	102	91	101
Jun p	107	99	84	92	97	96

p Provisional.

Index to statistics

'Trade and Industry's index to statistics appear this week on page 254

Patents recorded 'licences of right'

Under section 46 of the Patents Act 1977 the register was noted 'licences of right' in respect of the following patents on the date specified:

17 October 1978

1141820 Daimler-Benz Aktiengesellschaft
Suspension arrangements for engine and front wheels in motor vehicles
1169488 Daimler-Benz Aktiengesellschaft
Apparatus for ventilating a vehicle interior
1485265 EMI Ltd
Automatic testing of duplicated records
1487308 EMI Ltd
Improvements in or relating to sensors of ultra-sonic images
1223692 Dreibolz and Co Ltd
Improvements in or relating to sensors of ultra-sonic images
1251066 Societe Anonyme Automobiles Citroen
Vehicle body construction for sealing between the roof and hinged door or like panel
1403201 Laboratoire L. Lafon
N, N-Disubstituted amides, their preparation and pharmaceutical compositions containing them
1421294 William John Benmore
Display devices
1433875 Brian Lionel Hunt Bishop
Improvements in or relating to liquid supply and measuring systems
1488881 Robert Wakefield Norris JR
Traffic markers and method of formation
1495524 Agfa-Gevaert
Hardening of proteinaceous materials

20 October 1978

1502267 Agfa-Gevaert
Improvements relating to extrusion dies in which at least one lip of the die orifice is adjustable
1502285 Agfa-Gevaert
Preparation of 4-monohalo -2- pyrazolin-5- ones
1503906 Agfa-Gevaert
Antistatic coating compositions
1507983 Agfa-Gevaert
Motion picture film materials containing magnetic recording stripes
1508128 Agfa-Gevaert
Extrusion die assembly with adjustable orifice
1509748 Agfa-Gevaert
Preparation of 4-methyl -2- pyrazolin-5- ones
1421043 Agfa-Gevaert Aktiengesellschaft
Continuous ink jet recording
1455877 Agfa-Gevaert Aktiengesellschaft
The ink jet process
1455878 Agfa-Gevaert Aktiengesellschaft
Yellow inks for the jet process
1455879 Agfa-Gevaert Aktiengesellschaft
The ink jet process
1461343 Agfa-Gevaert Aktiengesellschaft
Automatic film-cassette fabrication
1391217 Compagnie Electro-mecanique
Method of and apparatus for methodically bringing a gas and a liquid into contact
1416523 The Electricity Council
Improvements in or relating to hot water central heating apparatus
1431737 Angelo Guala S.p.A.
Method of manufacture of closure devices for cans and like containers
1442250 Chinon Gyogyszer es Vegyeszeti Termekek Gyara Rt.
Preparation of 4- hydroxybenzonitrile derivatives
1484609 International Standard Electric Corporation
Radio receiver
1500145 Maschinenfabrik Rieter A.G.
Steering device on a transport truck

Any person who claims that the proprietor of the patent is, and was at the time of the entry, precluded by a contract in which the claimant is interested from granting licences under the patent may, within three months after the making of the relevant entry, apply to the Comptroller on patents form 31/77 for cancellation of the entry.

I. J. G. Davies, Comptroller

Engineering industries: indices of production up to July

Series rebased on 1975 = 100

This article presents the new series of indices of production for the engineering industries rebased on 1975 = 100. It is the first occasion on which these new indices have been published. The new industry weights are shown in the first column of the table with the weights of the previous series based on 1970 = 100 in brackets alongside. Comparison of these two columns reveals that between 1970 and 1975 the relative importance of electrical engineering has grown significantly at the expense of the instrument and mechanical engineering sectors, in particular 'telecommunications', 'computers' and 'electronic capital goods' have considerably larger weights in the new series while 'machine tools', 'office machinery', 'other non-electrical machinery' and 'ball, roller and plain bearings' in the mechanical engineering sector and 'photographic and copying equipment' and 'scientific and industrial instruments' in instrument engineering have declined.

Overall the series rebased on 1975 = 100 shows a more favourable picture of production in the engineering industries over the last few years than the previous series based on 1970 = 100. This is because in the new index for combined engineering as well as those indices for the mechanical, instrument and electrical sectors the more dynamic faster-growing industries have a larger weight and those in decline a lower one. This is also reflected in the indices for individual industries where restructuring of the wholesale price indices used as deflators gives greater weight to price variations in those items whose sales have increased most rapidly since 1970.

In spite of the small rise in output shown by the latest three monthly movement, mechanical engineering remains on the fairly level trend it has displayed over the last 18 months. Instrument engineering production has, however, risen sharply since the first quarter of 1978. The rising trend in electrical engineering output which began in the last half of 1977 continues.

Most industries in the mechanical engineering sector have increased output over the last few months although as shown in the final column, six industries have experienced at least minor falls. In particular, output of 'other non-electrical machinery' fell substantially in the May-July period compared with the previous three months although this reflects an atypically high figure for the first quarter.

In the instrument engineering sector the significant rise in output by the dominant 'scientific and industrial instrument' industry and the large rise in the 'watches and clocks' industry in the May-July period was offset to a minor extent by falls in the other two industries.

Within electrical engineering 'broadcasting equipment' and 'batteries' showed a marked improvement in output while noteworthy gains were also made by the 'telecommunications' and 'domestic electrical appliances' industries. The only significant falls were in 'records and tapes' and 'electric parts for vehicles'.

Inquiries: On the article and the statistics: Mr I. P. Tutt, Branch EcS3A, Department of Industry, Room 618, Dean Bradley House, 52 Horseferry Road, London SW1P 2AG, tel. 01-212 5770. Requests for quarterly indices for past year: Mr P. Coulson, Branch 5, Central Statistical Office, Great George Street, London SW1P 3AG, tel. 01-233 7239.

Indices of production for engineering industries

Seasonally adjusted volume indices

		1975 = 100				1976	1977				1978			
MLH		Weight (percentage) 1975	(1970)	1976	1977 p	4th qtr	1st qtr p	2nd qtr p	3rd qtr p	4th qtr p	1st qtr p	2nd qtr p	May-July av. [1]	Per cent change May-July average on previous 3 months
3310	Agricultural machinery	1.07	(1.05)	96.6	93.6	99.8	99.0	88.7	94.6	92.2	88.9	93.6	91.7	+1
3320	Machine tools	2.94	(4.01)	83.3	80.0	82.5	82.0	78.8	79.3	80.0	80.5	80.6	81.5	+1
3331	Pumps	1.33	(1.02)	107.6	110.9	114.0	112.3	114.6	112.7	103.9	104.7	113.4	113.7	+5
3332	Valves	1.87	(1.49)	91.2	96.3	96.6	98.0	88.6	104.6	94.2	94.8	96.7	94.8	−1
3333/4	Compressors	1.90	(1.85)	97.9	101.4	99.9	100.8	98.8	101.5	104.7	104.6	102.4	101.0	−3
3340	Industrial engines	1.54	(1.61)	100.9	109.3	97.6	112.4	104.8	108.6	111.3	107.0	109.8	109.0	+1
3350	Textile machinery	1.89	(2.25)	69.6	46.7	58.3	52.0	43.3	42.8	48.8	41.2	42.2	43.0	+6
3360	Construction equipment	2.99	(2.82)	99.1	100.0	98.0	110.3	95.6	98.1	96.2	90.0	96.9	96.3	+5
3370	Mechanical handling equipment	3.72	(3.47)	90.1	88.0	90.5	92.5	90.3	88.8	80.6	85.0	90.8	91.4	+5
3380	Office machinery	1.25	(2.03)	95.9	97.2	99.7	97.1	94.9	97.2	99.4	70.8	72.4	[2]	[2]
3391	Mining machinery	1.54	(1.04)	93.1	87.2	87.4	81.4	85.6	85.9	95.8	107.3	103.2	105.2	−1
3392	Printing and paper machinery	1.05	(1.02)	86.7	86.6	86.0	87.2	86.3	84.1	88.9	81.5	[2]	[2]	[2]
3393/4	Refrigerating and space-heating machinery	2.40	(2.32)	94.6	93.6	94.8	98.0	95.2	93.2	87.9	98.5	100.2	[2]	[2]
3395/6	Weighing machinery and power tools	0.75	(1.08)	99.3	101.6	98.5	100.8	104.1	94.4	107.3	117.0	113.1	109.5	−6
3397/8	Food processing machinery: packaging machinery	1.62	(1.53)	93.6	90.0	87.4	90.6	89.2	97.4	82.7	86.8	82.5	[2]	[2]
3399	Other non-electrical machinery	3.79	(4.99)	96.5	96.5	91.1	110.2	93.3	90.2	92.2	103.6	92.4	91.2	−10
3414	Constructional steelwork	3.51	(3.11)	93.1	79.0	86.4	80.8	78.7	80.4	76.1	76.6	83.5	83.6	+5
3415	Industrial plant and fabricated steelwork	9.59	(7.92)	101.9	101.2	100.7	99.7	103.9	100.6	100.6	97.8	97.7	99.6	+3
3491	Ball, roller and plain bearings	1.76	(3.17)	99.2	97.9	102.7	102.3	98.3	96.3	94.8	95.2	95.7	95.5	—
	Other mechanical engineering	7.64	(7.40)	95.6	95.5	94.4	97.0	94.6	97.6	92.8	99.6	97.4	97.2	−2
	Mechanical engineering	54.14	(55.16)	95.1	93.2	93.6	95.8	92.6	93.1	91.3	92.5	93.2	93.4	+1
3510	Photographic and copying equipment	0.42	(0.80)	99.7	103.1	115.2	101.1	105.4	105.7	100.3	135.9	133.8	133.3	−3
3520	Watches and clocks	0.51	(0.53)	91.3	90.5	92.3	84.5	88.2	98.1	91.4	87.2	96.8	99.3	+11
3530	Surgical instruments	1.42	(1.18)	91.5	89.2	93.0	91.9	88.3	89.1	87.6	88.3	86.5	85.6	−2
3540	Scientific and industrial instruments	4.80	(5.69)	98.4	102.0	102.8	98.5	103.2	102.5	103.7	102.4	110.3	109.6	+4
	Instrument engineering	7.15	(8.19)	96.6	98.7	100.8	96.3	99.3	99.7	99.4	100.5	106.0	105.5	+3
3610	Electrical machinery	6.81	(7.25)	97.6	102.1	98.1	100.1	101.3	104.2	102.6	108.9	104.3	107.6	—
3620	Wires and cables	2.64	(2.91)	101.6	107.5	108.5	109.8	107.9	108.8	103.3	103.0	105.3	105.6	+2
3630	Telecommunications	4.62	(3.28)	86.8	72.2	76.9	72.3	71.8	73.7	71.2	66.7	73.8	74.0	+8
3640	Electronic components	5.18	(5.48)	106.6	121.4	114.6	120.2	122.0	120.5	123.0	133.1	135.4	[2]	[2]
3651	Records and tapes	0.59	(0.42)	93.1	95.7	90.4	105.9	92.6	89.1	95.2	100.1	104.2	98.6	−5
3652	Broadcasting equipment	1.73	(2.75)	92.4	89.7	100.5	87.2	84.4	96.5	90.7	93.4	112.0	111.5	+11
3660	Computers	3.20	(1.43)	103.4	122.4	108.7	107.5	116.4	132.9	133.0	143.0	139.2	141.8	—
3670	Electronic capital goods	5.37	(4.30)	104.5	116.0	108.0	114.3	113.7	114.5	121.4	117.3	115.4	114.1	−2
3680	Domestic electrical appliances	3.10	(2.99)	92.2	93.2	97.0	100.5	88.3	93.8	90.1	88.6	96.8	98.2	+7
3691	Electric parts for vehicles	2.15	(1.90)	97.3	89.7	95.8	94.5	98.2	75.1	91.0	99.8	90.8	89.1	−9
3692/3	Batteries	1.19	(1.46)	99.2	98.4	95.7	101.3	88.5	99.0	104.6	101.5	113.6	116.3	+11
3694	Lamps and other electrical	2.14	(2.50)	96.4	98.0	98.8	100.6	98.7	98.1	94.8	106.6	108.3	107.0	−1
	Electrical engineering	38.71	(36.65)	98.5	102.7	100.5	102.0	101.3	103.4	104.1	107.4	108.8	109.3	+1
	Combined engineering	100.00	(100.00)	96.5	97.3	96.8	98.3	96.4	97.6	96.8	98.8	100.2	100.4	+1

[1] Averages if for other than a calendar quarter should not be compared with those in the preceding column; the estimates are not independent and are subject to erratic variation and later revisions. Comparisons with earlier quarters provide more reliable guides to recent trends. [2]Not available owing to insufficient response. p Provisional.

Cost indices for the aerospace and radio, radar and electronic capital goods industries

August's cost indices for the aerospace and radio, radar and electronic capital goods industries are given in the table. Attention is drawn to the footnotes: an explanation of the compilation of the indices was given in the introductory article in *Trade and Industry*, 3 February.

The present series of cost indices, which are based on 1968 with 1970 = 100, are to be replaced by a new series based on 1974 with 1975 as 100. The new series will first be published on 8 December.

1975 = 100 series

The new series of index numbers is being based on the 1974 pattern of purchases but with the reference year of 1975 taken as 100. The index numbers will measure changes in the price of the 1974 quantities purchased and will express the price of these quantities as a percentage of their average price in 1975. The adoption of the 1974 pattern of purchases is due to the fact that the latest source of detailed information on purchases is the 1974 purchases inquiry; the selection of 1975 rather than 1974 as the reference year is to fall in line with the rebased series of wholesale price indices which provide the majority of the indicators used in the cost indices calculation.

1970 = 100 series

For the convenience of those who use the index numbers in long-term contracts to take account of changes in the costs of materials, multiplication factors will be provided. This will enable the 1970 = 100 indices to be extended beyond April 1978, which will be the last firm month published on the old base, with the month-to-month movements of the equivalent index in the 1975 = 100 series.

Further information about the rebasing of the aerospace and radio, radar and electronic capital goods industries cost indices can be obtained from the Department of Industry.

Inquiries: 01-215 3514.

Cost indices for the aerospace and radio, radar and electronic capital goods industries (MLH 383 and 367 respectively) 1970 = 100

	1977					1978							
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1 BOUGHT OUT FINISHED GOODS PURCHASED BY	p	p	p	p	p	p	p	p	p	p	p	p	p
Aerospace industry	261.9	264.0	267.6	272.2	273.1	275.5	277.2	280.3	285.5	287.4	289.5	291.2	290.1
Airframe sector	258.2	259.8	263.5	267.9	268.8	271.4	273.1	276.1	280.9	282.7	284.7	286.3	285.3
Aero-engine and aero-engine parts sector	265.2	267.6	270.9	275.4	276.6	279.1	280.9	284.0	289.5	291.4	293.2	295.2	294.2
Aero-engine parts sector	262.2	263.8	267.5	270.7	272.5	276.2	277.9	280.5	284.6	286.2	287.4	289.7	290.1
Aircraft components sector	266.8	269.1	272.2	276.4	277.4	279.2	281.0	284.3	289.7	291.8	293.7	295.4	294.2
2 OTHER MATERIALS PURCHASED BY											p	p	p
Aerospace industry	315.2	318.3	319.8	317.3	317.1	316.6	316.9	319.5	323.0	325.0	327.3	327.7	328.4
Airframe sector	301.2	303.4	304.8	302.9	303.6	304.0	304.5	305.9	308.5	309.7	311.2	312.1	313.1
Aero-engine and aero-engine parts sector	310.2	315.6	318.9	317.6	317.5	319.3	319.6	321.4	324.0	325.5	329.2	331.0	333.4
Aero-engine parts sector	330.5	333.8	335.2	332.2	331.3	330.0	330.4	334.3	338.4	341.1	342.2	342.7	343.1
Aircraft components sector	322.7	324.0	324.3	320.8	320.4	317.9	317.9	321.5	325.9	328.6	329.6	328.7	328.2
3 ALL PURCHASES OF GOODS BY	p	p	p	p	p	p	p	p	p	p	p	p	p
Aerospace industry	279.5	282.0	284.8	287.1	287.7	289.1	290.3	293.3	297.8	299.8	302.0	303.3	302.8
Airframe sector	268.1	269.8	273.0	275.9	275.8	278.9	280.3	283.0	287.2	288.9	290.8	292.2	291.7
Aero-engine and aero-engine parts sector	281.3	284.8	288.2	290.5	291.3	293.5	294.8	297.5	301.8	303.7	306.1	308.1	308.3
Aero-engine parts sector	289.8	292.1	294.9	295.6	296.3	298.0	299.1	302.3	306.2	308.4	309.6	311.1	311.6
Aircraft components sector	299.7	301.5	302.9	302.5	302.7	302.0	302.7	306.3	310.9	313.5	314.8	315.0	314.2
Radio, radar and electronic capital goods industry	260.8	262.1	265.2	268.2	268.2	270.5	272.0	275.2	278.6	280.5	282.7	284.0	284.0
4 SALARIES AND GENERAL EXPENSES	p	p	p	p	p	p	p	p	p	p	p	p	p
Aerospace industry	253.8	256.2	259.6	265.4	266.4	267.9	269.5	272.6	279.4	281.2	283.6	285.1	282.3
Airframe sector	251.6	254.2	257.7	264.0	265.1	266.5	268.4	271.5	278.3	280.2	282.6	284.3	281.4
Aero-engine and aero-engine parts sector	259.5	261.9	265.1	270.6	271.6	273.1	274.7	277.6	284.0	285.8	288.1	289.6	287.2
Aero-engine parts sector	253.0	255.4	258.6	264.1	265.1	266.7	268.3	271.5	278.0	279.9	282.2	283.7	281.5
Aircraft components sector	248.3	250.7	254.1	260.1	261.1	262.4	264.2	267.3	274.0	275.8	278.3	279.7	276.9
Radio, radar and electronic capital goods industry	233.0	235.5	239.0	245.5	246.5	247.5	249.3	252.3	259.0	260.9	263.4	264.9	261.5
5 HOURLY EARNINGS OF ADULT MANUAL WORKERS										p	p	p	p
Aerospace industry	256.0	258.9	262.9	271.6	272.8	274.3	276.7	280.9	289.2	292.1	295.4	297.3	292.0
				p	p	p	p	p	p	p	p	p	p
Radio, radar and electronic capital goods industry	279.3	279.4	288.3	302.0	294.4	297.6	299.7	307.1	311.8	316.2	322.4	320.3	315.1
6 COMBINED COSTS	p	p	p	p	p	p	p	p	p	p	p	p	p
Aerospace industry	264.4	266.9	270.2	275.5	276.4	277.7	279.4	282.7	289.0	291.1	293.5	295.0	292.6
Airframe sector	258.5	260.9	264.4	270.2	271.2	272.8	274.6	277.8	284.1	286.1	288.6	290.1	287.5
Aero-engine and aero-engine parts sector	266.8	269.8	273.2	278.5	279.5	281.1	282.8	285.9	292.1	294.1	296.6	298.4	296.2
Aero-engine parts sector	264.9	267.4	270.8	276.1	277.1	278.6	280.3	283.7	290.2	292.4	294.7	296.3	293.8
Aircraft components sector	266.4	268.8	271.8	277.0	277.8	278.4	280.1	283.6	290.4	292.6	295.0	296.2	293.1
Radio, radar and electronic capital goods industry	253.5	255.1	259.3	265.4	264.5	266.5	268.2	272.0	276.8	279.2	282.1	282.9	280.8

Definitive information on earnings for both manual and administrative, technical and clerical (ATC) workers is available only for certain months of the year – manual earnings information is available for MLH 383 for April and October but for MLH 367 in respect of October only; ATC salaries information for both industries is available for April of each year. The indices of combined costs are based on the assumption of no change in productivity.

Revisions to series brought about as a result of ATC salaries information becoming available will be shown in the article to be published on 8 December and will affect indices from May last year up to and including those of August.

Revisions to series incorporated as a result of manual earnings information from the October survey are published in the April article and these affect series from the preceding November up to and including December. The results obtained from the April aerospace survey will affect indices from last November up to and including June and were shown in the article published on 6 October.

The cost index tables previously D1-D5 and D7 have now been redesignated sections 1 to 6 in the table.

p Provisional

Economic Trends

A monthly journal, compiled by the Central Statistical Office, for those who want to follow the main trends of the economic situation in the United Kingdom. It brings together the main statistical series of employment, output, consumption, trade and finance, and each issue contains special feature articles on some aspect of the statistics.

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Regional development grants: £98.3m paid out in third quarter

Regional development grants paid out in the quarter ended 30 September 1978 totalled £98.3 million.

The following list shows companies which have received one or more payments of regional development grant of over £25,000 in the quarter. The total of these payments is £68.1 million.

The table is drawn up on a regional basis according to the location of the premises in question and does not take account of any repayments of grant by deduction or otherwise.

Applicant	Location of premises	Grant (£'000)
Scotland		
Acna (UK) Ltd	Stevenston	93
Alliance Smurfit Cases (Scotland) Ltd	Glasgow	29
Allied Breweries (UK) Ltd	Alloa	75
Babcock and Wilcox (Plant Leasing) Ltd	Renfrew	29
Baker Oil Tools (UK) Ltd	Aberdeen	220
Ballantyne Sportswear Co Ltd	Innerleithen	37
Barclays Export and Finance Co Ltd	Airdrie	149
Barclays Export and Finance Co Ltd	Grangemouth	221
Bass Ltd	Glasgow	139
Boot Co Ltd	Airdrie	33
Borg-Warner Chemicals Division of Borg-Warner Ltd	Grangemouth	54
BP Oil Development Ltd	Grangemouth	27
BP Oil Grangemouth Refinery Ltd	Grangemouth	167
BP Trading Ltd	Grangemouth	1,305
British Leyland UK Ltd	Bathgate	74
British Railways Board	Motherwell	42
British Steel Corporation	Gartcosh	272
British Steel Corporation	Motherwell	2,590
British Steel Corporation	Wishaw	32
Cadbury Schweppes Foods Ltd	Montrose	40
Cameron Iron Works Ltd	Livingston	52
Cape Industries Ltd	Stirling	26
Carron Hydraulics Ltd	Kirkcaldy	49
Clark Taylor and Co Ltd	Lockerbie	25
Continex International Ltd	B'ness	42
David A. Hall Ltd	Broxburn	33
Devro Ltd	Bellshill	277
Digital Equipment Scotland Ltd	Ayr	268
Distillers Co (Bottling Services) Ltd	Leven	26
Distillers Co (Yeast) Ltd	Menstrie	34
Esso Petroleum Co Ltd	St Fergus	751
Fairclough Construction Services Ltd	Paisley	118
First National Bank of Chicago	Falkirk	203
Glaxo Operations UK Ltd	Montrose	68
Govan Shipbuilders Ltd	Glasgow	263
GR–Stein Refractories Ltd	Linlithgow	253
Guard Bridge Paper Co Ltd	Guardbridge	43
Guthrie Corporation Ltd	Glasgow	181
Hambros Bank Ltd	Glasgow	55
Hoover Ltd	Cambuslang	70
IBM United Kingdom Ltd	Greenock	224
Imperial Chemical Industries Ltd	Dumfries	80
Imperial Chemical Industries Ltd	Grangemouth	747
Imperial Chemical Industries Ltd	Stevenston	192
Imperial Group Ltd	Glasgow	92
Inveresk Paper Co Ltd	Denny	37
Inveresk Paper Co Ltd	Inverkeithing	34
John Horn Ltd	Glasgow	38
John Wood Group Engineering Ltd	Aberdeen	25
Kings and Co Ltd	Perth	55
Lake and Cruickshank Ltd	Buckhaven	26
M. and A. Thomson Litho Ltd	East Kilbride	37
McDonald Electric (Scotland) Ltd	East Kilbride	87
Mactaggart Scott & Co Ltd	Loanhead	45
Michelin Tyre Co Ltd	Aberdeen	42
Midland Montagu Leasing Ltd	Alloa	39
Midland Montagu Leasing Ltd	Grangemouth	2,028
Midland Montagu Leasing (UK) Ltd	Aberdeen	36
Midland Montagu Leasing (UK) Ltd	Connel	36
Moray District Council	Aberlour-On-Spey	28
Moray Firth Maltings Ltd	Arbroath	100
Motorola Ltd	East Kilbride	107
Nairn Floors Ltd	Kirkcaldy	334
National Semiconductor (UK) Ltd	Greenock	114
National Steel Foundry (1914) Ltd	Leven	26
National Supply Co (UK) Ltd	Aberdeen	36
Newage Engineers Ltd	Irvine	26
North British Distillery Co Ltd	Edinburgh	53
North West Securities Ltd	Cumbernauld	25
Ocli Optical Coatings Ltd	Dunfermline	27
Phillips Electrical Ltd	Dunfermline	31
Polaroid (UK) Ltd	Vale of Leven	34
Prestcold Ltd	Glasgow	44
Ramco Oilfield and Marine Services Ltd	Aberdeen	62
Roanold Plastics Ltd	Glasgow	33
Roche Products Ltd	Dalry	27
Royal Bank Leasing Ltd	Hillington	78
Scotsman Publications Ltd	Edinburgh	87
Scott and Fyfe Ltd	Tayport	66
Scottish Agricultural Industries Ltd	Edinburgh	327
Scottish and Newcastle Breweries Ltd	Edinburgh	258
Sidlaw Industries Ltd	Dundee	85
Smith Anderson and Co Ltd	Falkland	38
Stonefield Vehicles Ltd	Cumnock	49
Strathclyde Leasing Co Ltd	Alloa	41
Strathclyde Leasing Co Ltd	Glasgow	26
Sunblest Bakeries (Dundee) Ltd	Dundee	29
Synthetic Fabrics (Scotland) Ltd	Forfar	44
Thiokol Chemicals Ltd	Forfar	69
Timex Corporation	Dundee	44
TK Value Ltd	Dunfermline	33
Tri-State Oil Tool (UK) Ltd	Dyce	42
Tullis Neill Ltd	Dalkeith	41
Tullis Russell and Co Ltd	Markinch	134
Vesuvius Crucible Co Ltd	Newmilns	28
Vibroplant Ltd	'S'	49
Wiggins Teape Ltd	Bucksburn	27
Yarrow (Shipbuilders) Ltd	Scotstoun	621
Young's Paraffin Light and Mineral Oil Co Ltd	Pumpherston	55
Total		15,743
Wales		
Alf Parkman Ltd	Usk	28
Amoco (UK) Ltd	Milford Haven	48
Avana Bakeries Ltd	Cardiff	40
Avon Rubber Co (Bridgend) Ltd	Bridgend	37
BICC Ltd	Isycoed	28
BL Cars Ltd	Pengam	306
BP Oil Llandarcy Refinery Ltd	Neath	173
Bramber Engineering Co Ltd	Tonypandy	56
British Leyland UK Ltd	Cardiff	27
British Steel Corporation	Ebbw Vale	317
British Steel Corporation	Llanelli	153
British Steel Corporation	Port Talbot	3,903
British Steel Corporation	Shotton	597
British Tissues Ltd	Llangynwyd	41
Burlington Fabrics (Holdings) Ltd	Caerphilly	29
Compair Industrial Ltd	Swansea	39
Country Produce Ltd	Hawarden	47
Courtaulds Ltd	Flint	60
Courtaulds Ltd	Holywell	207
Duport Steels Ltd	Llanelli	395
European Profiles Ltd	Ammanford	27
Ford Motor Co Ltd	Bridgend	180
Ford Motor Co Ltd	Swansea	30
Galebourne Ltd	Cwmgors	139
George Wimpey and Co Ltd	Glyneath	52
GKN (South Wales) Ltd	Cardiff	37
Glamorgan Roadstone Ltd	Pontyclun	33
Hotpoint Ltd	Llandudno Junction	87
Hoover Ltd	Merthyr Tydfil	123
Imperial Chemical Industries Ltd	Pontypool	90
Imperial Metal Industries (Kynock) Ltd	Swansea	39
Inco Europe Ltd	Swansea	505
Kellogg Co of Great Britain Ltd	Wrexham	77
LCR Components	Tredegar	28
Lloyds Leasing Ltd	Shotton	27
Lucas Trading Co Ltd	Pontypool	27
Metal Box Ltd	Gwersyllt	45
Mettoy Co Ltd	Swansea	106
M. J. Gleeson (Contractors) Ltd	'S'	28
Monsanto Ltd	Wrexham	91
National Coal Board	Aberserchan	37
National Coal Board	Abertillery	75
National Coal Board	Bedwas	98
National Coal Board	Bridgend	43
National Coal Board	Cwm	51
National Coal Board	Llanelli	26
National Coal Board	Mardy	89
National Coal Board	Oakdale	49
National Coal Board	Treharris	101
Nu-Aire Contracts Ltd	Caerphilly	34
OP Chocolate Ltd	Merthyr Tydfil	54
Palmer Research Laboratories Ltd	Mostyn	42
Pembroke Cracking Co	Pembroke	155
P. Leiner and Sons (Wales) Ltd	Pontypridd	55
Portals Water Treatment Ltd	Pontyclun	26
Portland Chemicals Ltd	Cardiff	50
Radiochemical Centre Ltd	Cardiff	68
S. A. Brain and Co Ltd	Cardiff	109
Signode Ltd	Swansea	82
South Wales Switchgear Ltd	Blackwood	35
Thermoplastic Polymers Ltd	Rhymney	39
T. I. Rollo-Hardy Ltd	Treorchy	38
Unigate Foods Ltd	Carmarthen	36
Whitbread and Co Ltd	Magor	1,000
3M (United Kingdom) Ltd	Swansea	50
Total		10,744
Northern		
Abrahams and Co (B/ham) Ltd	Gateshead	49
Albright and Wilson Ltd	Whitehaven	93
Alcan (UK) Ltd	Ashington	30
Anzon Ltd	Walsend	120
Associated Lead Manufacturers Ltd	Newcastle	89
Associated Lead Manufacturers Ltd	North Shields	43
Aycliffe Development Corporation	Newton Aycliffe	38
Barclays Mercantile Industrial Finance Ltd	Stockton	26
Baring Brothers and Co Ltd	Consett	81
Baring Brothers and Co Ltd	Middlesbrough	55
Baring Brothers and Co Ltd	Redcar	146
Batchelor Robinson Metals and Chemicals Ltd	Hartlepool	43
Black and Decker Ltd	Spennymoor	40
BOC Ltd	Middlesbrough	320
BOCM Silcock Ltd	Ferryhill	57
Bowater-Scott Corporation Ltd	Barrow-in-Furness	120
BP Trading Ltd	Middlesbrough	931
British Chrome and Chemicals Ltd	Stockton	97
British Industrial Plastics Ltd	Darlington	199
British Industrial Plastics Ltd	Newton Aycliffe	433
British Rail Engineering Ltd	Shildon	50
British Steel Corporation	Consett	521
British Steel Corporation	Darlington	102
British Steel Corporation	Hartlepool	449
British Steel Corporation	Middlesbrough	2,568
British Steel Corporation	Redcar	3,696
British Steel Corporation	Skinningrove	34
British Steel Corporation	Weardale	188
British Steel Corporation	Workington	531
BTP Tioxide Ltd	Greatham	1,571
Camille Simon Ltd	Ulverston	33
Carpets International (Northern) Ltd (formerly Kossett Carpets Ltd)	Northallerton	32
Carreras Rothmans Ltd	Darlington	201
Caterpillar Tractor Co Ltd	Birtley	138
City Leasing Ltd and City Leasing (Teeside) Ltd	Middlesbrough	191
Cleveland Potash Ltd	Loftus	126
Commercial Plastics Ltd	Cramlington	153
Cumberland Fibres Ltd	Annfield Plain	140
Cummins Engine Co Ltd	Darlington	69
David Caird Ltd	Barrow-in-Furness	26
DJB Engineering Ltd	Peterlee	55
Dunlop Ltd	Washington	33
Ellis and Goldstein (Holdings) Ltd	North Shields	30
Engineering Services (Wilton) Ltd	Middlesbrough	39
Eskett Quarries Ltd	Frizington	35
Farmway Ltd	Piercebridge	31
F. Hills and Sons Ltd	Stockton	62
Field Sons and Co Ltd	Newcastle	42
Filmco International Incorporated	Stockton	179
Forward Leasing (UK) Ltd	Sunderland	27
George Blair and Co Ltd	Stanhope	28
GKN Steelstock Ltd	Hebburn	29
Glaxo Laboratories Ltd	Ulverston	193
Hardy Spicer Ltd	Stockton	76
Imperial Chemical Industries Ltd	Billingham	2,735
Imperial Chemical Industries Ltd	Middlesbrough	227
Imperial Chemical Industries Ltd	Middlesbrough	1,928
Ingersol Rand Co Ltd	Gateshead	28
J. W. Cameron and Co Ltd	Hartlepool	45
Kimberley-Clark Ltd	Prudhoe	374
Lonrho Textiles Ltd	Cramlington	36
MacMillan Bloedel Containers Ltd	Bishop Auckland	29
Monsanto Ltd	Middlesbrough	1,879
National Coal Board	Hartlepool	47
National Coal Board	Horden	55
National Coal Board	Seaham	79
National Coal Board	South Shields	387
National Coal Board	Sunderland	149
National Coal Board	Whitehaven	195
National Coal Board Opencast Executive	Northern Region (various)	153
Newcastle Chronicle and Journal Ltd	Newcastle	64
Norpipe Petroleum UK Ltd	Billingham	354
Norpipe Petroleum UK Ltd	Middlesbrough	246
Norsea Pipeline Ltd	Billingham	773
Norsea Pipeline Ltd	Middlesbrough	1,389
Northern Clubs Federation Brewery Ltd	Gateshead	197
Northern Dairies Creameries Ltd	Northallerton	86
Northern Engineering Industries Ltd	Newcastle	165
Pawsons Washington Ltd	Washington	32

Applicant	Location of premises	Grant (£'000)
Polyamide Intermediates Ltd	Middlesbrough	579
Ronan Engineering Ltd	Washington	27
Rediffusion Consumer Electronics Ltd	Billingham	44
Rowntree Mackintosh Ltd	Newcastle	41
Shell UK Ltd	Middlesbrough	30
Sidex Ltd	Wigton	40
Smart and Brown Engineers Ltd	Spennymoor	27
Smart and Brown Lighting Ltd	Spennymoor	35
Smith Brothers (Whitehaven) Ltd	Workington	39
Smiths Dock Co Ltd	Middlesbrough	37
Standard Chartered Leasing Co Ltd	Barrow-in-Furness	95
Sterling Winthrop Group Ltd	Newcastle	67
Taylor Woodrow Plant Co Ltd	Morpeth	43
Thames Board Mills Ltd	Workington	62
Thermal Syndicate Ltd	Wallsend	36
Thomas De La Rue and Co Ltd	Gateshead	168
Thomas Mouget and Co Ltd	Middlesbrough	36
United Biscuits Ltd	Billingham	39
Vaux Breweries Ltd	Sunderland	47
Vickers Ltd	Newcastle	165
Vickers Ltd	Newcastle	40
Wavin Plastics Ltd	Brandon	80
Weir Polypac Ltd	Hartlepool	35
Wilkinson Sword Ltd	Cramlington	88
William Brown's Saw Mills Ltd	Darlington	192
Wilson Walton Engineering Ltd	Middlesbrough	30
W. R. Grace Ltd	Seal Sands/ Middlesbrough	128
Total		28,590
Yorkshire and Humberside		
Arthur Lee and Sons Ltd	Sheffield	58
Associated Dairies Ltd	Settle	26
Associated Dairies Ltd	Skipton	94
Barnsley Canister Co Ltd	Barnsley	57
Beatson Clark and Co Ltd	Rotherham	39
Birds Eye Foods Ltd	Grimsby	97
BOCM Silcock Ltd	Gainsborough	50
BOCM Silcock Ltd	Goole	28
BOCM Silcock Ltd	Selby	26
BOCM Silcock Ltd	Tholthorpe	146
British Rail Engineering Ltd	Doncaster	52
British Steel Corporation	Leeds	144
British Steel Corporation	Scunthorpe	900
British Steel Corporation	Sheffield	320
Canning Town Glass Ltd	Mexborough	43
Ciba-Geigy Chemicals Ltd	Grimsby	92
Croda Chemicals Ltd	Hull	29
Croda Oleochemicals Group Ltd	Hull	33
Courage Brewing Ltd	Tadcaster	82
E. Green and Son Ltd	Wakefield	40
Evans Brothers Ltd	Scarborough	35
F. Hall and Sons Ltd	Hull	25
Findus Ltd	Cleethorpes	254
Fisons Ltd	Grimsby	400
Fisons Ltd	Immingham	66
Harlow Chemical Co Ltd	Grimsby	52
Henry Booth (Hull) Ltd	Hull	53
Humber Kitchens Ltd	Howden	222
Ideal Standard Ltd	Hull	27
Joseph Lumb and Sons Ltd	Huddersfield	46
Jungheinrich Leasing Ltd	Hull	72
Leeds and Bradford Boiler Co Ltd	Pudsey	26
Lehane Mackenzie and Shand Ltd	Sheffield	26
Lombard North Central Leasing Ltd	Hull	45
London and Scandinavian Metallurgical Co Ltd	Rotherham	25
Mabey and Johnson Ltd	Leeds	27
Papropack Ltd	Hull	26
Peglers Ltd	Doncaster	31
Plaxtons (Scarborough) Ltd	Scarborough	26
Reckitt and Colman Products Ltd	Hull	25
Reckitt and Sons Ltd	Hull	159
Regina Fibreglass Ltd	Liversedge	28
Ross and Catherall Ltd	Killamarsh	26
Sheffield Smelting Co Ltd	Sheffield	63
Silentnight Properties Ltd	Keighley	43
Simon Rosedowns Ltd	Kingston/Hull	28
Smith and Nephew Plastics Ltd	Hull	25
Thomas Hill (Rotherham) Ltd	Rotherham	42
Tinsley Wire (Sheffield) Ltd	Sheffield	85
United Biscuits (UK) Ltd	Grimsby	160
Wold Farm Foods Ltd	Grimsby	27
Total		4,551
East Midlands		
Jersey-Kapwood Ltd	Alfreton	49
Kodak Ltd	Sutton-in-Ashfield	117
Meritina Ltd	Huthwaite	162
Stevensons (Fabric Dyers) Ltd	Somercotes	30
Total		358
South West		
Devenish Redruth Brewery Ltd	Redruth	27
Marine Projects (Plymouth) Ltd	Plymouth	60
Pall Europe Ltd	Ilfracombe	111
Pall Europe Ltd	Redruth	71
St Modwen Securities Ltd	Plymouth	30
Unigate Foods Ltd	Torrington	27
Western Excavating (ECC) Ltd	St Austell	28
Total		354
West Midlands		
Unigate Foods Ltd	Ellesmere	27
Total		27
North West		
Associated Biscuits Ltd	Liverpool	80
Austin Packaging Group Ltd	Bromborough	37
BAT (UK and Export) Ltd	Liverpool	77
Bells Sons and Co (Druggists) Ltd	Southport	26
BICC Ltd	Helsby	27
BICC Ltd	Liverpool	105
Birds Eye Foods Ltd	Liverpool	54
BOC Ltd	Liverpool	26
BOCM Silcock Ltd	Bebington	26
British Leyland UK Ltd	Leyland	201[1]
Brooke Bond Oxo Ltd	Manchester	62
Burmah Oil Trading Ltd	Ellesmere Port	36
Bury and Masco Industries Ltd	Rossendale	27
Cabot Carbon Ltd	Ellesmere Port	62
Carrington Viyella Properties Ltd	Barrowford	32
Chloride Industrial Batteries Ltd	Bolton	164
Clayton Aniline Co Ltd	Manchester	50
Cross International AG	Prescot	124
Curver PCM Ltd	Runcorn	37
Di Lusso Kitchens Ltd	Whitworth	30
DRG UK Ltd	Liverpool	113
Dunlop Ltd	Skelmersdale	54
E. R. Squibb and Sons Ltd	Wallasey	166
Factory Holdings Group Ltd	Birkenhead	42
Feroxide (Widnes) Ltd	Widnes	31
Fillite (Runcorn) Ltd	Runcorn	26
Fine Art Developments Ltd	Church Accrington	168
Fisons Ltd	Holmes Chapel	33
Fisons Ltd	Widnes	56
Ford Motor Co Ltd	Liverpool	78
Frederick Robinson Ltd	Bredbury, Stockport	34
GEC Distribution Equipment Ltd	Liverpool	29
GEC Switchgear Ltd	Manchester	56
Gelatine Products Ltd	Runcorn	63
General Motors Ltd	Liverpool	50
Girling Ltd	Bromborough	87
Gold Crown Foods Ltd	Liverpool	62
Golden Wonder Ltd	Widnes	68
Gomme Holdings Ltd	Nelson	32
Imperial Chemical Industries Ltd	Runcorn	814
Imperial Chemical Industries Ltd	Thornton, Blackpool	75
Imperial Chemical Industries Ltd	Widnes	196
Imperial Group Ltd	Liverpool	63
James R. Crompton and Brothers Ltd	Bury	68
Joseph Crosfield and Sons Ltd	Warrington	26
Kodak Ltd	Liverpool	41
Larkspur Soft Drinks Ltd	Skelmersdale	34
Lever Brothers Ltd	Port Sunlight	171
Liverpool Central Oil Co Ltd	Skelmersdale	35
McKechnie Chemicals Ltd	Widnes	52
Merseyside Food Products Ltd	Liverpool	112
National Coal Board	Prescot	95
National Coal Board	St Helens	368
North West Fibres Ltd	Liverpool	29
Oldham Batteries Ltd	Manchester	37
Pfizer Ltd	Birkenhead	113
Pilkington Brothers Ltd	St Helens	446
Plessey Telecommunications Ltd	Liverpool	39
Polythene Drums (Lancashire) Ltd	Skelmersdale	37
Ravenhead Co Ltd	St Helens	104
Rockware Glass Ltd	St Helens	417
Royal Ordnance Factory	Radway Green, Crewe	72
Runcorn Development Corporation	Runcorn	46
Seriachius Converting Ltd	Skelmersdale	30
Shell Chemicals UK Ltd	Ellesmere Port	721
Shell Research Ltd	Ince Chester	204
Simon Engineering Ltd	Stockport	30
Smith Brothers (Hyde)	Hyde	29
Travenol Laboratories Ltd	Nelson	38
United Biscuits Ltd	Liverpool	292
Van den Berghs and Jurgens Ltd	Bromborough	49
Vauxhall Motors Ltd	Ellesmere Port	234
Welcome Foundation Ltd	Crewe	26
William Aitenhead Ltd	Oldham	83
Total		7,759

Notes

1 'S' indicates use in more than one premises or sites in a development area.

2 Information about the publication of earlier lists appeared in *Trade and Industry*, 11 August 1978.

UK exports invoiced in foreign currencies

The latest six-monthly survey examining the extent to which UK exporters invoice in foreign currencies has been analysed and the results are set out in the tables. A sample of commercial invoices (about 3600) relating to United Kingdom export shipments in November 1977, selected randomly, formed the basis of the survey.

Overall, the proportion of UK exports invoiced in foreign currencies was estimated at 31 per cent, a result not significantly different from that obtained from the survey relating to May 1977 (*Trade and Industry*, 5 May 1978, page 275). Twelve per cent of the value of exports were invoiced in terms of the importing countries' own currency (including exports to the United States invoiced in US dollars), 17 per cent in US dollars and 2 per cent in

Table 1 UK exports: invoicing currency analysis by area

Percentage by value

1 Shipments in November 1977
2 Shipments in May 1977
3 Shipment in October-November 1976

	Western Europe	Oil exporting countries	North America	Rest of world: Total	Rest of world: Other developed countries	Total all countries
Invoiced in own currency						
1	**12**	**3**		**4**	**12**	**12** [1]
2	16	4		1	1	15 [1]
3	18	2	**1 57** 2 45	3	7	15 [1]
Invoiced in US dollars			3 49			
1	**22**	**13**		**16**	**11**	**17**
2	18	18		11	11	14
3	9	11		21	8	12
Invoiced in other foreign currencies						
1	**2**	**1**	**0**	**1**	**0**	**2**
2	2	0	0	1	—	1
3	1	—	0	0	0	0
Invoiced in sterling						
1	**64**	**83**	**43**	**79**	**77**	**69**
2	64	78	55	87	88	70
3	72	87	51	76	85	73

[1] Includes exports to the USA invoiced in US dollars. — No trade 0 Trade of less than 0.5 per cent of area total.

other foreign currency.

Owing to sampling limitations the extent of geographical area detail has been reduced, from that published in previous surveys. The results of the latest survey are given in table 1, with comparable figures from the two previous surveys. As in earlier surveys the importance of invoicing in western European currencies to countries in western Europe and the widespread use of the US dollar as an invoicing currency are broadly confirmed as major characteristics in the invoicing of UK exports.

Table 2 provides the results in terms of commodity groupings, size of exporter and size of transaction. The findings of the latest survey regarding invoicing practices by size of exporter and size of transaction are confirmed by the latest survey, namely that foreign currency invoicing is more widespread among the large exporters and is correlated to the value of the transaction. As suggested when the results of the previous surveys were published there is a possibility of an under-statement in these estimates of the proportion of foreign currency invoicing because related traders may use sterling on the invoices in the UK with the subsidiary company or agent subsequently re-invoicing the foreign purchaser in local currency. **Inquiries:** 01-215 3445.

Table 2 UK exports: invoicing currency analysis

Foreign currency involving proportion: percentage by value

	Shipments in: Nov 1977	May 1977	Oct-Nov 1976
By commodity group			
Food, beverages and tobacco	22	22	33
Fuels and basic materials	67	58	35
Chemicals	41	48	35
Textiles	22	23	34
Metals and articles of metal	20	41	41
Electrical machinery, apparatus and appliances	24	20	24
Other machinery	19	11	12
Transport equipment	8	11	10
Other manufactured goods	53	44	28
Total	31	30	27
By size of exporter			
Small exporters	24	27	
Large exporters	50	40	
Total	31	30	
By size of transaction			
Up to £2,500	18	18	
Over £2,500 and up to £10,000	27	24	
Over £10,000 and up to £250,000	23	28	
Over £250,000	52	45	
Total	31	30	

Registrations of British, community and foreign films

The following are details of films registered by the Department of Trade under the Films Acts 1960 to 1970, as amended by the European Communities Act 1972, during the week ended Friday 27 October 1978. BR/E indicates that the film is a British quota film, EC that the film is a quota film. The date which forms part of the registration number of each is the date on which quota life of the film expires.

Title of film	Registered no.	Playing time minutes	Date of registration	Registered in the name of	Maker's name
BRITISH					
Power play	BR/E 39787C/29/10/83	102	23 October	Rank Film Distributors Ltd	Cowry Film Productions Ltd London and Magnum International Productions (Coup) Inc Ontario
Movietone News 2577	BR/E 39601/29/10/83	8	27 October	British Movietonews Ltd	British Movietonews Ltd
COMMUNITY					
Le Sauvage	EC 39788/29/10/83	107	25 October	Curzon Film Distributors Ltd	Lira Films, Paris and Produzione Artistiche International, Rome
Erotic Exploits of a Sexy Seducer	EC 39789/29/10/83	95	27 October	Childs Associates (Films) Ltd	Devon Film-Medusa Distribuzione, Rome

NOTE

The quota life of the film 'Of Jewels and Gold' (BR/E 37634/28/7/79) has been extended to 2 August 1981 by a direction under Section 2 (2A) of the Films Act 1960 as inserted by Section 10(1) of the Films Act 1970.

AMENDMENT TO THE REGISTER

The playing time of the film 'Massacre in Rome' (EC 38200/9/8/80) registered on 8 August 1975 has been amended to 80 minutes.

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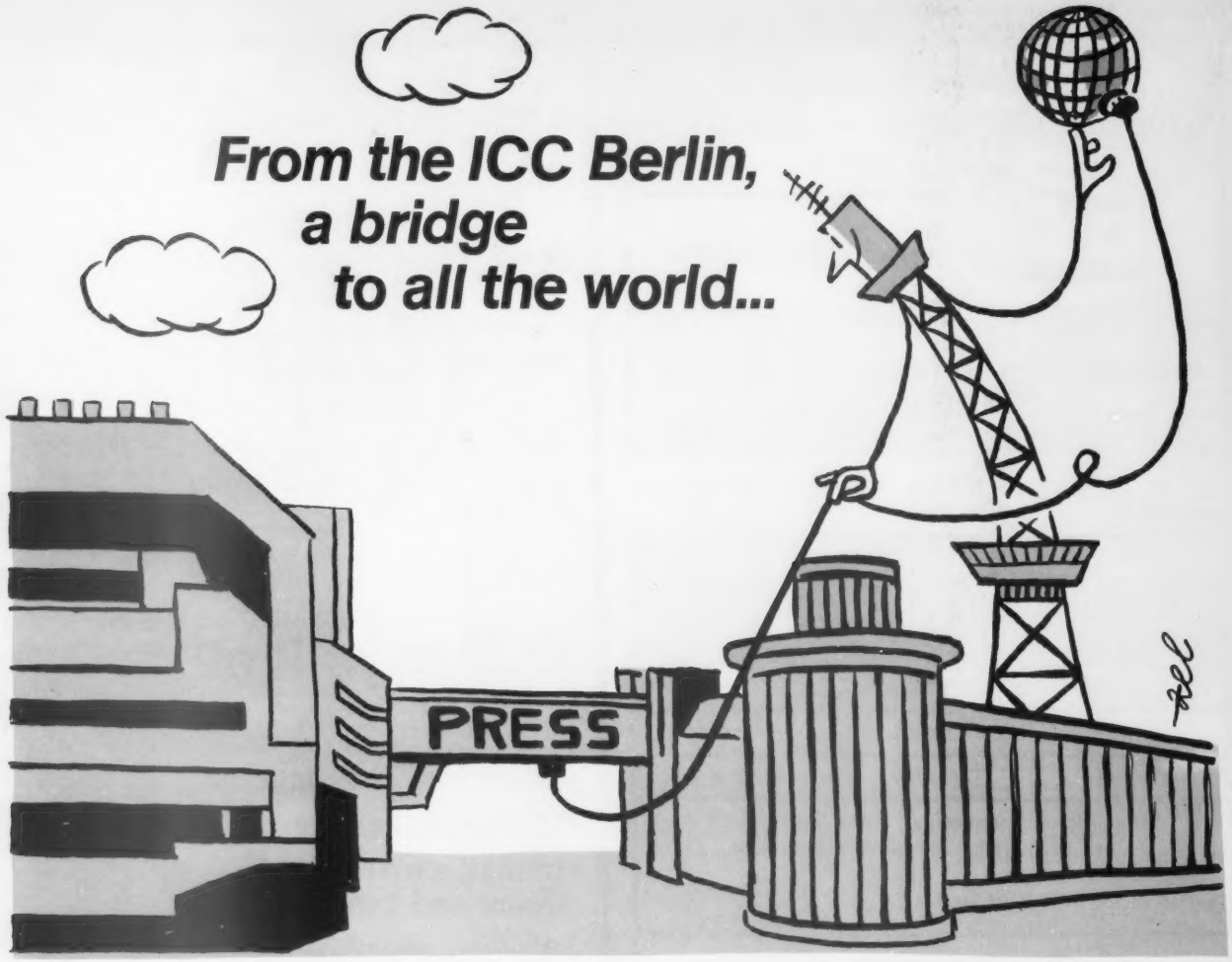

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